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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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FREEZING INJURY TO ASIATIC CHESTNUT TREES IN THE SOUTH IN NOVEMBER 1940

Bowen S. Crandall

During mid-November 1940 the Southern States were subjected to a period of abnormally cold weather. Temperatures as low as 12° and 14° F. were recorded the nights of the 15th and 16th by a number of farmers having chestnut plantings. Temperatures below 20° F. on the night of the 16th were general through the South. Reports that reached the Division of Forest Pathology soon after the chestnuts started to leaf out in the spring indicated that losses had been experienced in some plantings. As opportunity presented itself the test plantings of the Division were surveyed to determine the extent of injury.

While too few cases are available to allow accurate conclusions to be drawn, certain inferences can be made. Temperatures during October and up to November 7 were generally mild. Heavy rains in early November broke a severe drought in many sections. It appears probable that chestnuts were slow in reaching a dormant condition in the plantings where losses occurred.

Harper (3) reported that around Tuscaloosa, Alabama, trees got such a late start, owing to a spring freeze on April 12 to 13, 1940, that most of the leaves of deciduous trees had not yet matured sufficiently by mid-November to form the abscission layer at the base of the petiole and were thus still green when the severe drop in temperature occurred. This April freeze referred to by Harper was general throughout much of the South.

Fernholz and Potter (2) concluded that delayed dormancy was responsible for the injury to tung trees from Texas to Florida. Pecan trees were also injured in this same area by the cold. Losses under similar conditions were reported in Minnesota by Brierley (1), in Iowa by Pickett and Lantz (6) and Maney (5), in Illinois by Kelly and McMunn (4), as having occurred on apple and many other fruit and ornamental trees long considered hardy in those areas. Wright (7) reported widespread injury to many fruit and ornamental trees in Lincoln, Nebraska, and to nursery stock in Nebraska and Kansas. His conclusions also were that the primary cause was the condition of dormancy rather than the temperatures to which the stock was subjected.

Chestnut plantings experiencing the heaviest losses had certain features in common that would result in delay in hardening off, or dormancy, of the trees. These were: late season cultivation, mulching, releasing from competing growth, fall pruning, or cutting back in preparation for top-working the trees to new varieties. In one case near Columbus, Georgia, 4 plantings were located at different elevations on 1 farm. The planting at the lowest elevation, maintained as a well-cultivated orchard, suffered almost a 100% loss. Those at the higher elevations, set out in forest plantings, without cultivation, were practically uninjured.

Trees in the plantings located in the northern halves of Georgia, Alabama, and Mississippi were not greatly injured and apparently were sufficiently dormant to withstand the freeze, since reports of the owners and Weather Bureau records indicate that they were subjected to temperatures just as low as those that occurred in the plantings where

injury occurred. A certain critical area remained between the extremes in which the trees were apparently not completely dormant and in which temperatures went low enough to cause injury and death. (See Figure 1.)

Each of the plantings in which losses occurred contained a number of selections of at least 2 different species, Castanea mollissima and C. crenata, in about equal numbers. These 2 species seemed to be equally susceptible to winter injury. No losses were observed in C. henryi, a chinquapin species included in some of the plantings, usually considered susceptible to winter injury, but only a limited number of plants were under observation. Nearly all of the chestnuts under observation were seedlings, only a few grafted trees being included. Most of these plantings were in forests rather than in orchards.

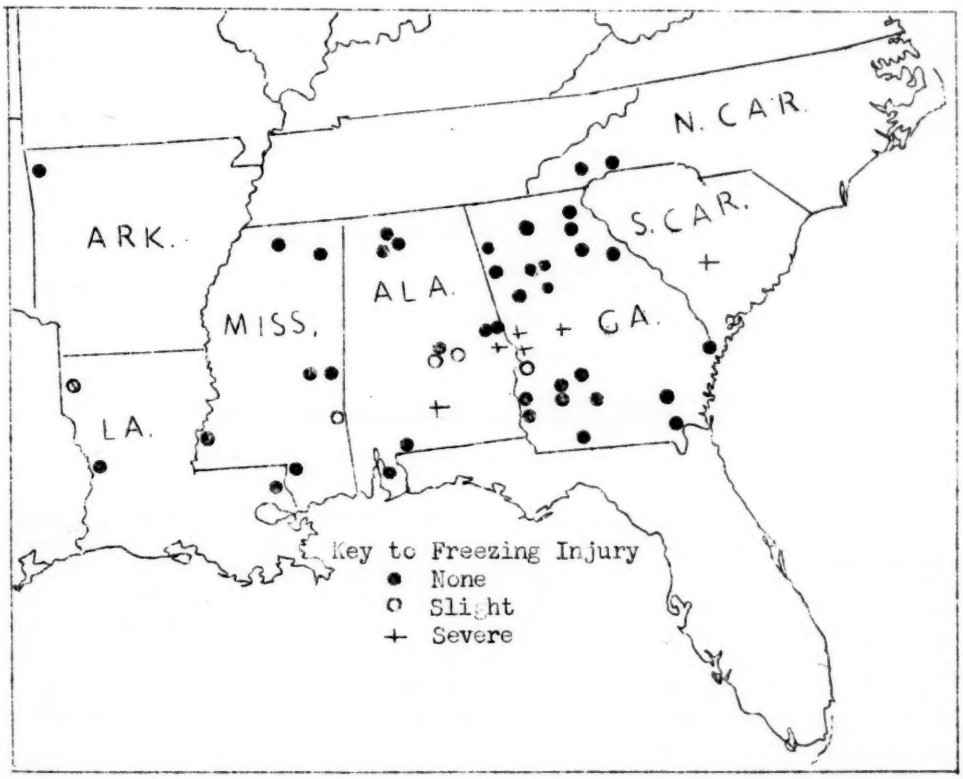

Figure 1. Locations of Asiatic chestnut plantations, showing no, slight, or severe freezing injury. Slight injury, as determined from reports indicates up to 30% of the trees injured but none killed; severe injury covers cases where 50% or more of the trees were killed.

It appears that the Asiatic chestnuts in the South if growing on sites where very good air drainage occurs, are generally hardy except for some damage during periods of very abnormally low temperatures in fall or spring. Cultivation and mulching and probably prun-

ing should not be done in the fall until after the trees have become dormant, especially if temperature and moisture conditions are such as to delay dormancy.

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7. Wright, Ernest. Freezing injury to trees and nursery stock in Nebraska and Kansas during November, 1940. Pl. Dis. Reptr. 25: 56-60. Feb. 1, 1941.

DIVISION OF FOREST PATHOLOGY, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE, ATHENS, GEORGIA

DISEASES OF SEED CABBAGE IN CALIFORNIA

William C. Snyder and Kenneth F. Baker

For many years California has produced some cabbage seed (Brassica oleracea L.), principally in the coastal area between San Francisco and Santa Barbara, In the 1942-1943 season there was a large increase in the acreage devoted to cabbage seed production in the State. Some of this increase represented planned seed plantings in coastal valleys made by the seed-growers, but much of it developed from bolted or cut-over fields of dehydration cabbage grown mostly in the San Joaquin Valley and saved for seed because of the serious shortage then anticipated in cabbage seed supplies.

In view of the importance of certain seed-borne diseases of cabbage in humid climates,--e.g. black rot (Bacterium campestre (Pam.) E.F.S.) [Xanthomonas campestris] and black leg (Phoma lingam (Tode) Desm.), both of which require hot water treatment in order to free infected seed from the causal organisms--a survey was made of the 1943 seed crop in company with Dr. Roy Magruder and Mr. Harold N. Coulter, of the Grain Products Branch, Food Distribution Administration. In this survey it is conservatively estimated that more than 90% of the cabbage seed

acreage of the State was seen. Many of the fields were visited several times from early in the season until maturity of the crop.

The results of this survey are recorded not so much because of the diseases found, which were for the most part unimportant, but because the important ones were not found.

It is estimated that approximately 375 acres of cabbage produced seed in California in 1943, and that about 80% of this acreage was in the San Joaquin Valley counties of Stanislaus, San Joaquin, Madera, Merced, Fresno and Tulare. Plantings in the coastal valleys were mostly in San Mateo, San Luis Obispo, Monterey, and Los Angeles Counties. It is estimated[1]/that the yield for the state may approach 125,000 lbs. of cabbage seed in 1943.

Diseases Found in Seed Fields in 1942-1943

Downy mildew (Peronospora parasitica (Pers.) Fries).--Downy mildew was of no importance or concern to growers, although found on outer leaves of plants in several fields both inland and on the coast. Infection and spread appeared to have been limited to the winter rainy season and no infection of heads, seed stalks, or pods was observed.

Alternaria leaf spots (Alternaria brassicae (Berk.) Sacc. [A. circinans (Berk. and Curt.) Bolle], and A. herculea (E. & M.) Ell. [A. brassicae (Berk.) Bolle]).--Leaf spots caused by either or both of these fungi were insignificant but could be found occasionally in most areas. When present the spots were small (up to 1 cm. in diameter) and limited to one or more of the older, outer leaves. No spots were found on the pods or seed stalks.

Ringspot (Mycosphaerella brassiciola (Fr.) Lindau).--The ringspot disease of cabbage has been known many years in coastal plantings of market cabbage, especially in the Colma region of San Mateo County.[2]/

In fields of seed cabbage ringspot was rare or absent, except in occasional, very small patches of the locally-grown Colma cabbage which growers in the Colma area (San Mateo County) had allowed to go to seed for their own use or to sell to other growers in the same district. Only here was seed stalk and pod infection observed, and since the seed, representing a possible total of 1 or 2 acres, was grown only for local consumption it can be eliminated from a discussion of commercial seed cabbage.

Several fields were seen which provided strong circumstantial evidence of seed transmission of the ringspot fungus. One grower in Monterey County, who had never grown cabbage before, put in 175 acres of Steins Flat Dutch for dehydration. Since some of the heads bolted the field was inspected April 15 along with seed fields in the same area. Scattered through the planting were occasional infections of ringspot on the bottom outer leaves. There was no other cabbage in the vicinity

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1/ These estimates kindly furnished by Mr. Harold N. Coulter.

2/ Weimer, J. L. Ringspot of crucifers caused by Mycosphaerella brassicicola (Fr.) Lindau. Journ. Agr. Res. 32: 97-132. 1926.

nor was there knowledge of cabbage having been grown recently in that vicinity. The seed source for this crop was the Puget Sound area where ringspot is often abundant on seed pods. 3/ In the same field another leaf spot caused by Cercospora (treated in the following section) apparently was introduced also with the seed.

The same situation was found in some plantings in the San Joaquin Valley, as illustrated by a 23-acre planting of Midseason Market in San Joaquin County, sown also from Puget Sound seed. This inland field was in a region never before devoted to cabbage production and in which ringspot had never been reported. The same scattering of infection on bottom leaves was noticedhere, in May, as had been noted previously on the coast, but no spread to upper leaves or to seed stalks was seen in any instance. All indications point to the unlikelihood that ringspot may be important away from the coast. A trace of Cercospora leaf spot was found inland as well as on the coast, along with ringspot.

Weimer 4/demonstrated that the ringspot fungus may be carried internally in seed of cabbage but was not able to show that infected seed when planted conveyed infection to the new plants. Circumstantial evidence gathered in the present survey leaves little question but that the ringspot fungus is seed-transmitted in field practise.

Cercospora leaf spot (Cercospora sp.).--For the first time, apparently, a leaf spot caused by Cercospora has been observed on cabbage grown in California. The spots resemble those of ringspot but lack the rings characteristic of the latter disease and are uniformly darker in color. Also, they have a more feathery irregular margin than do those of ringspot. The species has not been determined. This leaf spot was found rarely in a few inland and coastal fields, but was of no economic significance. Since it appeared on land not before planted to cabbage when sown with Puget Sound seed, seed transmission is indicated. No seed pod or seed stalk infection was found; only the lowest leaves showed infection.

Powdery mildew (Erysiphe polygoni DC.).--Very slight infection with powdery mildew was observed on the lowermost leaves of scattered plants in a few fields in the San Joaquin Valley, but was of no importance.

Drop or White blight (Sclerotinia sclerotiorum (Lib.) De Bary).--In most fields this disease was not detected, but an occasional head infected with drop was found in 3 or 4 fields. The infection of seed stalks, giving rise to the symptoms known as white blight, occurred in 3 fields, 2 in Tulare County and 1 in Los Angeles County. In 2 of these fields, 1 representing each of these counties, the disease was important in that it reduced the yield somewhat. The whitish lesions, apparently resulting from ascospore infections were found on various parts of the seed stalks, often near the tops, and where such infection had taken place girdling and breaking followed.

Virus diseases. --Virus diseases were not detected in seed plantings except in a very few instances. A few plants infected with black ring were found in one field in Los Angeles County. Occasional plants carrying infection by the aster yellows virus were seen in San Luis Obispo, Los Angeles and Stanislaus Counties.

3/ Walker, J. C. Cabbage, turnip and rutabaga. National Seedsman 7(12): 22-25. 1940.

4/ See footnote 2.

Diseases in Seed Fields Not Found in 1942-1943

Most important of the diseases searched for but not found were black rot and black leg. The latter disease has never been reported from California. Black rot has been seen in market cabbage on rare occasions in the State 5/but only in isolated plants apparently through seed, not in cabbage seed fields. These diseases are favored by continued warm, wet weather, a condition not normally met with in California cabbage growing sections. The absence of these 2 diseases in the cabbage seed fields of California is of importance to users of cabbage seed in the Mid-west, and East and South where the environments are such as to permit destructive outbreaks of these diseases originating from contaminated seed. Furthermore, California-grown seed need not be subjected to the hot water treatment recommended 6/ for cabbage seed not grown in areas free of these diseases. The absence of these two diseases is important from the production standpoint as well as from the standpoint of disease-free seed.

Discussion

Cabbage grown for seed in California normally is planted in summer or fall, depending upon the locality, and the seed harvested the following summer. The fields may be allowed to pass the winter in the head stage, in which case bolting occurs in the spring, or the heads may be cut out and the stumps allowed to send up seed stalks in the spring, the latter procedure permitting the harvesting of both a market and seed crop from the same planting. The latter practise has been recommended as being the least hazardous to the grower, for he obtains an income from the heads even if a seed crop fails to materialize. This is particularly true in the southern part of the State.

Where plantings are initiated during the dry season and matured in the next dry season little opportunity is offered for the development of wet weather diseases in either the main vegetative phase of growth or in the reproductive phase. Under such conditions there is little opportunity for them to be carried with the seed. With the onset of the winter rains, the accompanying drop in temperature apparently inhibits the development and spread of any but the cool, wet weather diseases like downy mildew and to some extent ringspot. So far the latter diseases though present in California seed fields, are of no importance to the crop, and are not on the seed stalks or pods. Likewise these are not recognized as important seed-borne diseases in the main cabbage growing States, where high temperatures prevail during the growing season. Ringspot, for example, is not known in the Middle West although seed from heavily infected crops has been supplied to the Middle West for some years. 7/

The most striking observation made during this survey from the disease standpoint was the lack of any disease on the seed stalks or pods, except for the 3 fields infected with Sclerotinia sclerotiorum, a wide-

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5/ Smith, Ralph E. Diseases of truck crops. California Agr. Exp. Sta. Cir. 119. 112 pp. 1940.
6/ Walker, J. C. Diseases of cabbage and related plants. U. S. Dept. Agric. Farmers' Bul. 1439. 36 pp. 1938.
7/ See footnote 3.

spread fungus not ordinarily classed as being seed borne. Moreover, it is noteworthy that not one of the diseases listed as being the chief disease of cabbage in the upper Mississippi Valley, 8/ namely clubroot, yellows, black rot, black leg, or mosaic, were found in any of the cabbage seed fields inspected in California this season. The maintenance of this situation, wherein a high quality of non-infected seed is grown will depend upon the wise choice of locations within the State for cabbage seed production, and upon the attention given by seed growers to crop rotation and sanitation.

Although this survey has been concerned with seed cabbage, it is apropos to consider briefly here the disease situation in respect to market cabbage. Market cabbage for local consumption is grown to a limited extent in the State, and only very recently has cabbage grown for heads been increased in connection with dehydration cabbage. Records on market cabbage diseases in California over a number of years may be summed up briefly as follows: Club root (Plasmodiophora brassicae Wor.) very localized, perhaps limited by soil conditions to one small area; yellows (Fusarium oxysporum f. conglutinans (Wr.) Snyder & Hansen) rare; black rot (Bacterium campestre) [Xanthomonas] rare; black leg (Phoma lingam) absent; mosaic and black ring, widespread but not commonly destructive; wire stem (Rhizoctonia solani Kuhn) common but usually its importance is limited to the seed bed; ring spot (Mycosphaerella brassicicola) common in the Colma area; drop (Sclerotinia sclerotiorum) common but not usually abundant enough to be destructive; leaf spot (Alternaria spp.) widespread but unimportant; downy mildew (Peronospora parasitica) widespread but usually not important; powdery mildew (Erysiphe polygoni), unimportant; Phytophthora root rot (Phytophthora megasperma Drechs.) localized and occasional, in general unimportant. Virus diseases are known to be present in some costal areas.

Thus the disease experience with cabbage, grown either for heads or for seed, is confined in California to a limited number of troubles which may affect production but which so far have been generally unimportant. From present indications ringspot and white blight seem capable of doing some damage under certain conditions, if not guarded against, and perhaps virus diseases should also be considered as potentially hazardous. The potential threat that these fungus and virus diseases carry is well illustrated by the destruction they have caused in seed fields in the Puget Sound area. If California is to maintain the relatively disease-free condition now found in its cabbage fields and to develop a dependable seed cabbage industry in the State, it behooves every grower of head or seed cabbage to consider cabbage diseases now, to look well to his seed source, and to practice consistently both plant bed and crop rotation. DIVISION OF PLANT PATHOLOGY, UNIVERSITY OF CALIFORNIA AT BERKELEY AND AT LOS ANGELES

8/ Vegetable Disease Control, War Emergency Committee, Report #10, Amer. Phytopath. Soc., Upper Miss. Valley Div., March 1, 1943.

NOTES ON DISEASES IN GEORGIA VICTORY GARDENS

G. E. Thompson and J. H. Miller

During the past season interest in gardening has reached the highest point in years. There have been many problems due to inexperience of operators, infestations of old gardens, and to shortages of good seeds and plants, and spray and dusting materials and equipment. All agricultural agencies have united in a food campaign consisting of radio speeches, newspaper articles and talks to garden clubs. In spite of this diseases have been an important factor in reducing yields beyond a point we had expected.

The information given below was obtained from frequent inspections of gardens in the Clarke County area, a few trips to south Georgia, and from specimens and questions sent in from all parts of the State.

Beans -- Very slight damage was observed on the first crop in most gardens. In early June southern blight (Sclerotium rolfsii) destroyed a few plants in one garden, and root-rot (Sclerotium bataicola) accounted for 25% loss in another. In one garden been mosaic was found June 6 and by June 21 most of the plants were affected and all were pulled. A trace of rust (Uromyces phaseoli var. typica) was present in most gardens. Root-knot (Heterodera marioni) was evident in almost every old garden in July when the first crop was about over.

In the large snap bean area in Brooks County the damage from root-knot was severe when inspected June 4th. There were many large areas with dwarf, chlorotic, unproductive plants.

Ashy stem blight (Sclerotium bataticola) destroyed a few lima bean plants in one garden in early June. Pod blight (Diaporthe phaseolorum) was sent in June from Effingham County.

Later crops of beans were completely destroyed in north Georgia by the drought in August and September.

Beets -- Leafspot (Cercospora beticola) was the only serious disease observed in every garden. The excess rains in May and June were probably responsible for accentuating the leaf injury. Many plants died during June following complete defoliation. The loss was about 20% for the average garden.

Cabbage -- Bacterial soft rot (Erwinia carotovora) destroyed from 20 to 30% of the heads in several gardens during July.

Cantaloup -- Damping-off (Rhizoctonia sp.) destroyed most of some rows of young plants in a garden that had been heavily fertilized with stable manure.

Carrot -- Leaf blight (Macrosporium [Alternaria] carotae) was found in all gardens during July, and when they were harvested about 50% of the leaves were destroyed. In the Navy Victory garden 3 acres lost most of the leaves by the time the carrots were dug in early August. This disease even appeared in a new site planted with treated seed. Southern blight (Sclerotium rolfsii) caused rot of a few carrots in one garden and root-knot (Heterodera marioni) produced

protuberances in 2 old gardens.

Cucumber -- Very early planted cucumbers matured a fair crop before the vines were destroyed about the middle of July when the pickle worms became serious in this area. Later plantings, however, were all seriously affected during July with downy mildew (Pseudoperonospora cubensis) and in 3 gardens the loss was 100%. In a 2-acre field at the Horticultural farm about 50% of the leaves were destroyed by August 5. This same field lost about 75% of the fruit from soft-rot (Pythium aphanidermatum) at the above date. Root-knot was found in one garden July 20 and all plants were dwarfed and yellow and the loss was complete. No garden cucumbers were sprayed and only one case of seed treatment was found.

Eggplant -- Leafspot and fruit rot (Diaporthe vexans) appeared about August 1 in several gardens and continued to spread during the rest of the season. In one the seed had been treated with Spergon and the site was new. Dusting with sulphur gave some control for the fruit rot, but caused much leaf burn during the July heat. A Kisin variety on the Horticultural farm was the most resistant. Bacterial wilt (Bacterium solanacearum) [Pseudomonas] was found in a few plants in this farm in the same variety, and in all plants in a garden at Commerce.

Okra -- The only noticeable disease was root-knot (Heterodera marioni) and this was found in every old garden and in one new one. It produced serious losses in 2 gardens.

Onion -- This crop was planted from sets in most gardens. Early June tops were infected with Macrosporium parasiticum [Stemphylium botryosum], and when they were dug, about July 20, some soft-rot (Erwinia carotovora) was found in every garden inspected. No treatment of sets or soil was practiced.

Pepper -- Garden peppers showed little disease except sunscald. One acre at the Horticultural farm had a loss of 10% of plants from wilt (Bacterium solanacearum [Pseudomonas]. Tomatoes had been in this field the previous year with the same wilt. About 50% of the fruits in this field were sun-scalded in September.

Squash -- Summer squash, the bush yellow kind, was grown in every garden, and showed no noticeable disease until about the middle of July when most of the vines were destroyed because of the pickle worms. About this time traces of powdery mildew (Erysiphe cichoracearum) and downy mildew (Pseudoperonospora cubensis) were seen but did little damage. Cucumber mosaic was found in 3 plants in 1 garden in early June. On the Horticultural farm about 2 acres of acorn squash on August 5 showed a trace of southern blight on both vines and fruits. Also, powdery mildew was seen on many leaves, but with slight loss. These fruits were harvested in early September and by then at least 40% of them were rotted with Mycosphaerella citrullina. This was a first record for Clarke County.

Tomato -- Bacterial wilt (Bacterium solanacearum) [Pseudomonas] was more common than that caused by Fusarium sp., probably because Marglobe was the predominant variety. In most cases it was limited to small areas, and did not spread much. Also, it occurred chiefly in old gardens with a previous bacterial wilt history. One exception was seen in a 5-acre field in Clarke County and in a small garden in Atlanta, neither previously in garden crops. The first had a loss of about 5% and in the second all plants died. This wilt was first seen about June 11 in north Georgia, but was more evident during July. In one garden 75% of the plants died, but the average for all gardens was about 10%. No wilt was found in new sites when the individual grew his own plants.

Early blight (Alternaria solani) was the chief disease in all fields and gardens beginning with mid-summer. It caused collar-rot, stem spots, and spotting on the lower leaves in green-pack fields in Brooks and Tatnall Counties in south Georgia during the last of May, and in north Georgia about June 15 in gardens. By the middle of July 2/3 of the leaves were dead in the Athens area. One 2-acre field at Jefferson was completely defoliated by August 1. Early blight appeared in every garden inspected except one, which was isolated on new land and planted with Ceresan-treated seed.

No control measures were practiced in most of the gardens. Plants were obtained from commercial sources or were home-grown; few growers treated their seed; and only 2 gardeners used a spray and they started too late. Also, no fields of mature tomatoes inspected in south Georgia had been sprayed. Some growers in southeast Georgia that had previously used insoluble coppers did not do so this year. The average loss from early blight was about 25%, due chiefly to the shortened season.

Leaf blight (Septoria lycopersici) appeared during the latter part of July and August in several gardens, with symptoms similar to those of early blight. It was impossible to separate this from the Alternaria blight in recording losses as both were often found in the same patch.

Fruit rots: The unusually heavy rainfall and large number of cloudy days in June and July probably accounted for the very small amount of blossom-end rot, and the heavy loss from other rots. Phytophthora parasitica, buckeye-rot, was found in many gardens during the rainy weather, and caused a loss of about 10% of the fruits during the latter part of June and the first 2 weeks in July.

Anthracnose (Colletotrichum phomoides) was found in 3 Athens gardens and all in 1 commercial field in Habersham County. This is the first time the writers have seen this disease in Georgia.

Mosaic: Typical tobacco mosaic, with dwarfed plants, rugose, chlorotic leaves, and some necrosis in the terminal leaves, was found in 3 Athens gardens. The first infection was seen June 11, and in 2 weeks the disease had spread to 4 other plants in 1 of the gardens. None of these plants bore normal fruits. In another garden a single row of nearly mature Marglobe, partially shaded, all exhibited symptoms on July 16. A so-called climbing tomato vine in this row did not show a mosaic symptom.

Leaf-roll, cause unknown, was first seen in Clarke County about June 10, when plants were nearly mature. In most cases the rolling was

most severe on the lower leaves, but often this symptom extended to the top. It was in every patch inspected during June and July, but disappeared with the drought in August. The loss from this cause was slight.

Root-knot (Heterodera marioni) was found on tomatoes in most of the old gardens and in a few new sites. In north Georgia the effects were not noticeable before June 20, and in most gardens it was July 1 before symptoms developed. The practice of buying plants, or swapping them with neighbors, seems to be the chief method of getting gardens infested. The loss from nematodes was complete in 2 gardens and was severe in several others.

In conclusion most of the backyard gardeners treated no seeds, used no sprays, and practiced no rotations. Dusting beans with rotenone was the only pest control practice universally used. Bacterium solanacearum, Heterodera marioni, and Erwinia carotovora are now in the soils of almost all old gardens which are too small to make rotations effective. In addition, the quantities of seed used are too small to expect treatment; there have been almost no inexpensive sprayers in stores. All that saved most gardens was the fact that the chief serious diseases do not show up much before the middle of July, therefore the early planted ones produced more vegetables than usual because of the increased acreage. If the seed companies would treat packet seed, and spray programs could be started early, we should add one or two months to the bearing season of many crops.

UNIVERSITY OF GEORGIA

ROOT KNOT RESISTANCE IN LYCOPERSICON PERUVIANUM

D. E. Ellis

Recent work has shown that introductions of Lycopersicon peruvianum, from South America, are resistant to a number of fungus, bacterial, and virus diseases of the common tomato (L. esculentum) (1) (5). In 1941, Bailey (2) reported that selections of L. peruvianum were more tolerant to the root knot nematode (Heterodera marioni) than any other of a large number of species and varieties tested under greenhouse conditions.

L. peruvianum has been included in tomato field plantings at McCullers Branch Experiment Station, McCullers, North Carolina, for the past 3 years, on soils heavily infested with the root knot nematode and has shown marked resistance. In a small non-replicated planting in 1941 it was much less severely affected by the root knot nematode than L. hirsutum and 10 varieties of L. esculentum. In 1942, 3 introductions of L. peruvianum (P. I. Nos. 126928, 126929, and 126944) 1/ were compared with Marglobe, Gulf State Market, and San Marzano. In

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1/ Seed supplied by W. S. Porte, United States Department of Agriculture, Bureau of Plant Industry, Beltsville, Maryland.

1943 one introduction (P. I. No. 126929) was again compared with a number of common varieties. Plants were started in flats in the greenhouse and transplanted to the field in May. Forty plants of each variety were set in each of 4 replications in a randomized block design. The plants were removed from the soil in August and classified according to the percentage of roots showing galls. Severity of infection was determined by calculating the "Root Knot Index," according to the method described by Smith (3) (4), excepting that 4 rather than 5 infection grades were used. 2/

Table 1 shows average root knot indices and infection percentages for L. peruvianum and the 3 varieties of L. esculentum grown both in 1942 and 1943.

Table 1. Root Knot Indices and Percentages of Plants with Galls

	Year	Marglobe	Gulf State Market	San Marzano	L. peruvianum (P.I. No.126929)
Root knot index*	1942	90.6	85.8	88.7	9.9
	1943	79.1	63.3	65.8	1.4
Percentage of plants with galls	1942	100.0	100.0	100.0	44.0
	1943	100.0	97.2	97.7	7.0

* Least difference required for significance at the 1% level; 1942 - 12.48; 1943 - 18.02.

2/ Each plant was first put into one of 4 infection grades according to the percentage of roots showing galls. The percentage of plants in each grade was then determined. These percentages were then multiplied by conversion factors and added to obtain the root knot index.

Factors calculated	Infection grade 0	1	2	3	Total plants	Root knot index
Percent infection	0	1-33	34-66	67-100		
Mean infection percent	0	16.7	50.0	83.3		
Conversion factor	0	1/5	3/5	5/5		
Conversion percent	0	20	60	100		
Sample Calculation						
Marglobe	0	4	5	31	40	
Percent of roots in grade	0	10.0	12.5	77.5		
X Conversion factor	0	2.0	7.5	77.5		87.0

There were no significant differences between the 3 introductions of L. peruvianum grown in 1942. Readings on 8 additional common varieties included in 1943 fell within the range of the 3 listed.

As shown by the percentage of affected plants, L. peruvianum is by no means immune. However, in most instances, infection was evidenced by only a very few small galls. Its relative resistance is more clearly brought out by the root knot indices which show that it was much less severely affected than the 3 varieties of the common tomato.

As pointed out by Alexander et al (1), crosses between L. peruvianum and the red fruited species are difficult to obtain. However, if this difficulty can be overcome, this species would appear to offer a good possibility for developing commercial tomato varieties resistant or tolerant to the root knot nematode.

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NORTH CARCLINA AGRICULTURAL EXPERIMENT STATION

REPORTS ON DISEASES OF TOMATO

MAINE: Early blight (Alternaria solani) was general but causing slight damage at Highmoor Farm. Leaf mold (Cladosporium fulvum) also occurred at Highmoor Farm causing moderate to severe damage.

Late blight (Phytophthora infestans) was found spreading from potatoes in a field at Portland and in another at Scarboro. Infection was general in the affected field and damage slight to severe. In the Scarboro fields infected spots were appearing on the fruits. (Robert C. Cassell, Emergency Plant Disease Prevention Project, August 28)

NEW HAMPSHIRE: Late blight was general, causing moderate damage to the foliage, in 2 fields, one in Durham and one in Colebrook. In the latter field slight infection was noted on the fruits also.

Early blight occurred generally to some extent in southern New Hampshire; in one case observed in Northwood damage was moderate.

Mottle mosaic (virus) was causing slight damage in one Northwood field. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 23).

VERMONT: Late blight was the cause of considerable foliage loss and fruit rot in Burlington, Essex Junction, and South Hero.

Early blight was general in Burlington and Essex Junction gardens, but damage was very slight in all cases. Septoria blight (Septoria lycopersici) was causing moderate to severe damage in gardens in Grand Isle, Burlington, and Essex Junction. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 27)

MASSACHUSETTS: Late blight was first observed in a planting in Georgetown near Boston on September 13; also on September 14 in Plymouth County in an unstaked, unprotected field just coming into picking. It was not observed even on unprotected late crops in Bristol County on September 15 nor in well-sprayed fields in Plymouth County. It was reported from Berkshire and Hampshire Counties since September 20.

Early blight was decidedly less damaging generally late in the season than in most former years. It was observed commonly, mostly as light to moderate infections, in all counties surveyed, -- Berkshire, Bristol, Essex, Franklin, Hampden, Hampshire, Middlesex, and Plymouth Counties. A few cases of severe defoliation were observed, 2 on unstaked early-set tomatoes in Bristol County September 15, and 1 on trellised tomatoes, Comet variety, in eastern Plymouth County Sept. 14. In the latter case, according to the grower, the field had been sprayed rather well since early to mid-July including applications (of home-made Bordeaux) throughout August. Yet the disease simply overran every plant in the field during the first 2 weeks of September causing rapid, severe defoliation. The field failed to set the first 2 or 3 hands, then set heavily thereafter with no more than a moderate amount of foliage.

Bacterial canker (Corynebacterium michiganense) was common in the Waltham section of Middlesex County. One grower there lost all his Victor crop and up to 70% of his other early-planted varieties.

Mosaic (virus) appears to be less prevalent and severe than usual in field tomatoes, but about normal in greenhouse crops. Localized or scattered light infections were observed on field crops in Bristol, Essex, Plymouth and Middlesex Counties, and one severe infection on greenhouse tomatoes in eastern Middlesex County.

One light case of streak (virus) was observed in a greenhouse in eastern Middlesex County on September 13.

Light to moderate local to scattered infections with leaf mold were observed in field tomatoes in Essex, Middlesex, and Plymouth Counties (September 13 to 15).

A light infection by anthracnose (Colletotrichum phomoides) was observed in the Waltham area of Middlesex County, September 13.

Wilt (Fusarium bulbigenum var. lycopersici) occurred generally in one field in southern Essex County causing moderate damage, while in the same vicinity the disease was present on one side of another field.

Verticillium wilt (Verticillium sp.) was observed in one field in eastern Plymouth County causing slight to moderate damage.

Blossom-end rot (physiogenic) continues to be the most pronounced trouble in garden and field tomatoes particularly in the droughty eastern and southern counties. (Surveys made by Robert C. Cassell, Emergency Plant Disease Prevention Project, August 25 to September 21, summarized by C. C. Boyd and Thomas Sproston, Massachusetts State College).

RHODE ISLAND: Early blight could be found almost anywhere in the State to some extent, but was seldom causing any appreciable damage. Leaf mold was reported by Mr. H. L. Keil to be causing a moderate account of damage in one victory garden in West Kingston. Septoria blight was general in one field in Apponaug and 2 fields in Portsmouth, causing damage ranging from slight to almost severe. Anthracnose appeared generally in 2 fields in Apponaug and 1 in Kingston, causing slight to moderate damage.

Blossom-end rot and physiogenic cracking of the fruits appear to be rather destructive in the State this year, their occurrence having been favored by the drought and warm weather. Dr. F. L. Howard estimates a 5% loss of the tomato crop in Rhode Island through blossom-end rot alone. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 13)

CONNECTICUT: In 3 Hamden fields leaf mold was general and caused slight to moderate damage. Dr. J. G. Horsfall reports that this disease has been generally troublesome to victory gardeners in New Haven. Septoria blight was causing moderate defoliation in one field. Slight to moderate infection by mosaic was general in one Hamden field; in another the damage was more severe.

Blossom-end rot and physiogenic cracking of the fruits have accounted for an excessive loss in the Connecticut tomato crop this year. In addition, drought and sun scald of the fruits, have contributed to the loss. (Robert C. Cassell, Emergency Plant Disease Prevention Project, September 13)

NEW YORK: Late blight, early blight, and anthracnose were observed in the vicinity of Poughkeepsie in Duchess County. Anthracnose was very prevalent in one field where many ripe fruits were discarded.

At the eastern end of Long Island there was a scattered infection by Septoria blight and early blight. Anthracnose was seen in one field. Both the yellow and green forms of the tobacco mosaic virus were observed on tomatoes. Nailhead spot (Alternaria tomato) was found in one field in which a diligent search was made. (L. J. Tyler, Emergency Plant Disease Prevention Project. August 23 to 31)

Late blight has been reported on tomatoes in the following New York counties: Albany, Clinton, Chautauqua, Duchess, Erie, Monroe, Oneida, Ontario, Rockland, Schuyler, Seneca, Tompkins, Ulster, and Wayne. In most cases, 1 to 2% of the fruits have been attacked, but in Ontario County up to 25% of the fruits in an unsprayed plot were diseased. (Charles Chupp, Cornell University, September 17)

Early blight is reported to have destroyed 50 to 75% of the foliage in fields near Lyons, Ontario County, Clyde in Cayuga County, and Alton in Wayne County. Loss in these fields is estimated at from 1 to

5 tons per acre depending on yield potential in the different fields. (G. L. McNew, New York State Agricultural Experiment Station, Geneva. August 24).

NEW JERSEY: August 16 to 21, southern New Jersey in Salem, Cumberland, Cape May, and western Atlantic and Gloucester Counties -- In some drought areas the fruits were few in number and very small and much of the foliage had dried up. Later plantings were growing well and had a fair amount of fruit set.

Neither early blight, late blight, nor Septoria leaf spot were evident in any degree of severity. Blossom-end rot was rather severe in drought areas, loss averaging 10%.

Fusarium wilt was present in many fields. Low areas in fields showed more wilt than higher ground, in some fields infection in the low spots being 100%. Rutgers is the most commonly planted variety. A 30-acre field near Halltown showed about 8 to 10% infection; other fields in this general area north of Salem had 10%, 20%, and 25%. On a farm near Deep Water 5 acres each of the Rutgers and Valiant varieties had been planted. Counts showed the following percentages of wilt in the 2 varieties: 16, 12, 8, 2, average 9.5; Valiant, 24, 21, 16, 16, average 19.2. A field of an unknown variety near Newport gave the following percentage counts: 14, 20, 26, 30, 76, average 33.

In 55 fields totalling 412 acres, wilt averaged 5%. Observations may be tabulated as follows:

Wilt %	Acres Number	Acres %	Fields Number	Fields %	Wilt %	Acres Number	Acres %	Fields Number	Fields %
33	6	1.5	1	1.8	6	3	0.7	1	1.8
25	10	2.4	1	1.8	5	10	2.4	1	1.8
20	14	3.4	2	3.6	4	9	2.2	2	3.6
15	7	1.7	2	3.6	3	50	12.1	3	5.5
14	10	2.4	1	1.8	2	51	12.4	5	9.1
10	40	9.7	6	10.9	1	139	33.7	16	29.1
9	30	7.3	1	1.8	0	30	7.3	12	21.8
8	3	0.7	1	1.8		412		55	

September 6 to 11, Mercer County -- In the Windsor section a medium late field was suffering severely from Septoria, while the fruit showed no diseases other than slight blossom-end rot. Only a very slight amount of late blight was observed on leaves. (E. A. Walker, Emergency Plant Disease Prevention Project).

PENNSYLVANIA: Observations were made in company with Dr. R. S. Kirby and Dr. F. H. Lewis of Pennsylvania State College, and with county agents.

Montgomery County, September 1 -- Five fields in the vicinity of Norristown were visited. Early blight varied from a trace on all plants to severe on all plants. Septoria blight was found in 2 out of 5 fields to the extent of a trace on 5% of the plants. Anthracnose varied from a trace to light infection.

Bucks County, September 2 -- Bacterial spot (Xanthomonas vesicatoria) was severe, early blight was very slight on most of the plants, and anthracnose very slight, in the vicinity of Doylestown.

Lancaster County, September 3 -- The following diseases were noted in fields near Lancaster and Lampeter: Anthracnose generally was very slight; early blight was moderate to light in different fields but usually was present on all plants; nailhead and bacterial spot (trace) were seen in 4 of 6 fields; and Septoria blight (trace on almost all plants) was seen in 2 of these fields.

Near Lampeter leaf mold was very severe on 75% of the plants in one field, practically destroying the crop. In another field, near Lancaster, leaf mold infection was slight on most of the plants. Examination of tomato plants in a few fields along route 30 between Lancaster and Gettysburg failed to reveal the presence of leaf mold.

Adams County, September 6 -- Early blight varied from light to moderately severe on all plants in fields near Idaville, and Biglerville, respectively. Much of the fruit in these fields had been harvested and little damage from the disease had resulted. Anthracnose varied from a trace to light infection of fruits in this area.

Leaf mold was found to the extent of a scant trace in one home garden in Arendtsville.

Franklin County, September 7 -- Early blight varied from a trace to light infection on most of the plants in fields examined near Scotland, Fayetteville, and Greenvillage. A trace of anthracnose was also found in these fields.

Mosaic (tobacco virus) and nailhead spot usually were present to the extent of a trace in all the above localities. The nailhead disease is reported because an Alternaria was always present in the lesions which were unlike those sometimes produced on the fruit by the early blight fungus and resembled those described as being caused by the nailhead fungus. Near Fayetteville a very destructive wilt disease was observed. Practically all plants in a 55-acre field were dead or dying. Brown discoloration was evident in the vascular elements of the stems of all plants examined and green fruits were found which exhibited numerous spots 5 to 8 mm. in diameter with a hydrotic halo. The cause is not known and is being investigated. The plants used in this field were said to be certified and were obtained outside the State. A conservative estimate of the yield loss in this field is 350 tons.

Cumberland County, September 8 -- Early blight was light on most of the plants in fields near Carlisle, Mount Holy Springs, and Brandtsville. A trace of anthracnose was also present. From 1 to 5% of the plants were affected by tobacco mosaic. Fruit pox (cause undetermined) and sun scald were light in the different fields visited.

Dauphin County, September 8 -- Early blight (trace on all plants) was present in 6 fields visited along the route (#422) followed across the county. Usually a trace of anthracnose and light sun scald were were also evident.

Lebanon County, September 9 -- Early blight and anthracnose varied from a scant trace to very slight, in fields near Cornwall and Schaefferstown. Sunscald and fruit pox were light in these fields. (L. J. Tyler, Emergency Plant Disease Prevention Project).

DELAWARE: Drought conditions were severe in New Castle and Kent Counties. The early tomato crop was about all harvested. Late tomatoes showed a considerable amount of blossom-end rot on both ripe and green fruits.

New Castle County -- In the Middletown, Townsend, and Blackbird areas the early tomato crop harvest was about complete. Early blight was severe in some fields. Blossom-end rot was not destructive on the early tomato crop, while late tomatoes were showing moderate to severe amounts. In one small garden patch along the road on hard clay soil near Townsend 90% of the fruits were destroyed by blossom-end rot.

Fusarium wilt was observed in many late tomato fields. In the vicinity of Townsend a 3-acre field had 10% wilt-affected plants; counts in a 1-acre field were 12%, 24%, 32%, or an average of 23%; in a 4-acre field counts gave 0, 0, 4, 16, 32, or an average of 11%; in another 2-acre field 1, 4, 12, averaging 6% wilt.

Septoria blight was slight in most of the fields visited. Moderate infection was seen in a 3-acre field near Blackbird. A 2-acre field north of Clayton showed severe infection, with the lower leaves turning yellow and falling off.

Early blight on late tomatoes was mostly slight and confined to the lower leaves. One 3-acre field near Blackbird was severely affected.

Kent County,-- Severe Septoria leaf and petiole infection was found in 3 fields near Cheswold, of 5 acres, 2 acres, and 1 acre, respectively. The fruit was not attacked in these fields. Slight amounts of early blight were found in a 6-acre field near Cheswold, and in a 3-acre field near Hartley; and a moderate infection was observed in a 5-acre field and slight infection in a 9-acre field, near Dover.

Fusarium wilt was observed near Cheswold in a 2-acre field with 2%, a 6-acre field with 1%, and a 1-acre field with 2%. Near Wymoing a 5-acre field showed 1% wilt; and 3 fields near Hartley averaged 15, 5, and 3%.

Blossom-end rot was slight (5 to 8% of the fruits affected) in a 9-acre field near Dover; and very severe (40% of the fruits affected) in a 5-acre field near Wyoming. (E. A. Walker, Emergency Plant Disease Prevention Project, August 23 to 28).

MARYLAND: August 23 to 28 --Counties visited showed the continued effect of the prolonged drought. Early tomato plants have lost most of their leaves. The fruit still remaining is very small, with severe blossom-end rot prevailing.

In Hartford County fields of late tomatoes observed near Darlington showed severe Septoria leaf spot on the lower leaves, with some defoliation. Early blight was developing rapidly on the bottom leaves, with some infection on petioles. Two percent of the ripe fruit showed blossom-end rot, but green fruits were not affected.

In Queen Anne County, medium late tomatoes showed slight early blight and Septoria blight. Some Fusarium wilt was present in most fields. One field was observed with an average of 10% of the plants affected by wilt or dead from the disease.

In Kent County more Fusarium wilt was observed in the Galena area than any other. Most fields averaged about 5%. One small field showed 80% diseased and dead plants.

August 30 to September 4, western Maryland -- The tomato crop in the Emmitsburg section of Frederick County is damaged severely by drought. The fruit is mostly small, and affected by blossom-end rot to the extent of 50%. In Washington County no leaf spot diseases were observed except at Hancock where there was a slight amount of early blight. Blossom-end rot was severe in every field visited. The loss will approximate 40% for the County. In Carroll County fields in the Westminster section would average 50% blossom-end rot. Slight amounts of early blight were observed in this section but it was not doing much damage. Blossom-end rot was severe in the Sykesville area of this county also. Four fields totalling 12 acres showed 50%, 80%, 30%, 20%, or an average of 45% blossom-end rot. Early blight was causing the loss of some lower leaves in this area.

September 6 to 11 -- The tomato crop in the Gambrills section of Anne Arundel County is suffering severely from drought. Blossom-end rot was very destructive, with over 25% of the fruit affected and of no commercial value. Septoria leaf spot was severe in one field, causing some defoliation. Early blight infection appears slight to moderate in all fields in Anne Arundel County and a slight amount was observed in most fields in Harford County. (E. A. Walker, Emergency Plant Disease Prevention Project).

VIRGINIA AND WEST VIRGINIA: In company with Dr. E. K. Vaughan, Extension Plant Pathologist in Virginia, the week of August 23 to 30 was devoted to a survey trip through southeastern Virginia. That part of the survey north of Hampton was conducted by the writer alone.

Drought conditions prevail throughout this area, being most severe in Pittsylvania through Brunswick Counties and decreasingly less severe as the Norfolk area was approached. Damage due to drought is severe in Westmoreland and Richmond Counties, less so between there and Norfolk.

Several large tomato fields were visited on the Eastern Shore. Leaf spot, tentatively diagnosed as due to Alternaria solani, had caused extensive defoliation of all early fields. In one large early field the crop had been reduced by 50%, symptoms suggesting that the Alternaria leaf spot was the primary causal agent. In an adjoining field of about 40 acres which was ready to pick, the plants had less than 5% of the leaves remaining and the crop was at least an 80% loss.

In one field near Hampton, common tobacco mosaic was observed on almost all plants, some of which showed in addition a fern-leaf type of growth. Approximately 20% of the plants in this field showed leaflet necrosis suggestive of a streak. Here, where only a few fruits had ripened, the location and the appearance of the dead leaflets indicated that fungus leaf spots were not responsible. The symptoms did not resemble those caused by tip blight.

In Lancaster, Northumberland, Richmond, and Westmoreland Counties -- the Northern Neck between the Potomac and Rappahannock Rivers -- Alternaria leaf spot had caused from 75 to 90% defoliation in all early fields. Crop reduction due to this disease is estimated as approximately 25%, this in addition to at least an equal loss due to drought in Richmond and Westmoreland Counties. In late fields which were ready for the first picking the disease was well distributed but

mostly had killed few leaves.

Throughout this area (all sections in which tomatoes were examined during the week) plants killed by southern blight (Sclerotium rolfsii), as well as Fusarium wilt, were found occasionally. In a few fields in the Eastern Shore possibly 2 or 3% of the plants were dead and in one field at least 10% were dead. Southern wilt and Fusarium wilt appeared to have killed about equal numbers. The plants had been purchased as either the Rutgers or the Marglobe variety.

During the week ending September 4 several fields were examined in the commercial canning tomato section in Morgan County, West Virginia. Here drought was the principal limiting factor in production. An estimate, arrived at in consultation with the County Agent, placed the upland crop at about 25% of normal, while fields on the Potomac River bottom lands had nearly a 75% crop.

Leaf blights caused by Alternaria and Septoria (confirmed by microscopic examination) were prevalent and had caused approximately 20% defoliation when only the first and second sets of fruit had been picked. It was estimated that leaf loss would so affect the later fruit that a yield loss of about 10% might be expected. Alternaria appeared to be the principal cause of leaf spot in most fields though in one practically all of it was due to Septoria.

Blossom-end rot was very prevalent on the upland fields. In one field severely affected by drought, 2/3, by count, of all fruits remaining (first and second sets already picked) were affected. Over all upland fields the loss due to blossom-end rot was estimated at 15% of the crop.

A few plants had been killed by Fusarium wilt. Mosaic was rarely seen. Owing to dry weather, parasitic fruit rots were rarely found.

From September 6 to 11 a survey trip was made through the northern panhandle of West Virginia, from Moundsville to Chester. This section lies along the Ohio River. Extensive defoliation was being caused by both Alternaria and Septoria blights, the latter being present in all fields examined. Fruit rot, apparently caused by Phytophthora parasitica, was prevalent in one plot of unstaked Rutgers tomatoes (44% by county). An adjacent unstaked but straw-mulched plot showed no rot.

In the vicinity of Morgantown early blight was very common; in dusting experiments fair control was obtained with certain materials. Tip blight (virus) was found affecting one plant in the field where it was very common last year. A clean-up program had been followed in the adjacent greenhouse during the winter and very few seedlings became infected in the spring of 1943. Fruit rot (Phytophthora sp.) was reported as causing severe loss in some plots.

During the week of September 18 a survey trip was made through southern West Virginia and western Virginia as far as Lebanon and Abingdon and return via Blacksburg, Virginia, and southeastern West Virginia. Phytophthora infestans was present on leaves or fruit or both, in almost all fields visited in western Virginia and in southeastern West Virginia. Loss was slight in most fields in Russell, Washington, Smyth, and Wythe Counties, Virginia. In one field 2% of the foliage and 10% of the fruit was affected; in most fields only a

trace was found. In one garden at Marlinton, in Greenbrier County, West Virginia, where Phytophthora was found on tomatoes July 29, fresh leaf infections were abundant and approximately 65% of the fruit was affected. The local County Agent estimated the loss in tomatoes due to late blight in that county as approximately 25%. Late blight is prevalent on tomatoes from Marlinton to Morgantown in West Virginia.

Alternaria leaf spot was found in all fields. A few fruits showed Alternaria rot, while one fruit showed typical nailhead spot symptoms. Septoria leaf spot was found occasionally throughout the area, but not in all fields. Leaf mold was observed on almost 100% of the leaves in one large garden in Logan, West Virginia. The root knot nematode (Heterodera marioni) was abundant in the Logan garden and had killed 30% of the plants.

In the Timberville section of Virginia, visited during the week ending September 25, the crop had been greatly reduced by drought but was in much better condition than in eastern West Virginia. Early blight ranged from slight to moderate but had caused much less loss than in any other commercial tomato area in Virginia or West Virginia. Septoria was not seen. Two plants were found killed by Sclerotium rolfsii. Alternaria fruit rot was found occasionally. Phytophthora rot was not seen. (C. F. Taylor, Emergency Plant Disease Prevention Project)

KENTUCKY: From August 30 to September 3 a survey was made, from the southwestern part of the State, up along the Ohio River to Louisville, then over to Lexington. Severe drought conditions were encountered until Louisville was reached, where a current rainfall occurred. Sun scald was severe in most of the fields examined, and bacterial soft rot was general. In 1 field in Fulton County there was a fair amount of sun scald and some bacterial soft rot. The plants were not staked. A 1-acre field in Graves County showed 35% Fusarium wilt, severe sun scald, and some bacterial soft rot. A 2-acre field in Hancock County was ruined by sun scald; the local cannery offered half-price for the fruit. The plants were not staked. Bacterial soft rot was common in this field. Another 5-acre field in Hancock County was almost a total loss due to sun scald. Sun scald was severe in 2 acres of the Rutgers variety in Breckenridge County. In Jefferson County in one field bacterial soft rot was present; no defoliation diseases were observed. In another field there was severe sun scald. In one field in Fayette County sun scald was severe and anthracnose and bacterial soft rot were both common on the fruit; in another, sun scald was rather severe and bacterial soft rot, anthracnose, and Fusarium wilt were present but not severe.

An 8-acre field in Christian County, visited during the week ending September 25, showed 11% of Fusarium wilt. (R. A. Hyre, Emergency Plant Disease Prevention Project).

TENNESSEE: In reporting tomato diseases I have made no attempt to distinguish between Alternaria (A. solani) and Stemphylium blight (S. solani). The latter disease [gray leaf spot] is present in both eastern and western Tennessee.

Septoria leaf spot occurred in most plantings examined, the greatest damage noted being in the regions of Gravette and Siloam Springs (Benton County) where the disease was causing the loss of lower leaves on many plants. However, the loss in these plantings from this late infection is negligible, since most of the fruit had been harvested. Perhaps, if weather had been conducive to earlier infection, a great loss might have resulted from this disease.

Blossom-end rot was still quite general.

Fusarium wilt was observed in tomato fields in the Van Buren area (Crawford County, northwest) examined in September. On the 115 acres examined, a loss of 5% could be attributed to this disease. (Howard W. Larsh, Emergency Plant Disease Prevention Project).

OHIO: In northern Ohio during the period from August 30 to September 8, tomatoes showed considerable damage due to anthracnose, the amount of damage being closely correlated with the variety. The disease is controlled by spraying, but this year the spray had to be applied at least 3 weeks before the ripening period began. Early blight was doing considerable damage at Wooster unless the plants were protected by spraying. At Bowling Green and in the northwestern part of the State generally leaf spot caused by Septoria lycopersici was doing considerable damage especially to the Rutgers variety. Spraying with copper, regardless of the material used, seemed to control the disease. (M. R. Harris, Emergency Plant Disease Prevention Project).

INDIANA: From August 24 to 27 a survey was made in northwestern Indiana. Three fields of tomatoes near LaPorte were severely defoliated by Septoria lycopersici. During sunny weather much of the remaining fruit will be sunscalded.

From September 16 to 18 a survey was made in the southeastern section in company with Dr. A. J. Ullstrup. Tomatoes were defoliated 50 to 90% by Septoria. Very little sun scald of the fruit was evident. The weather during the preceding 2 weeks had been cool and cloudy and not very conducive to sun scald. In 2 fields a trace of the fruit was affected with nailhead spot. (R. C. Baines, Emergency Plant Disease Prevention Project).

ILLINOIS: In 2 of the 8 fields examined in northern Illinois with Dr. M. B. Linn from September 6 to 10, approximately 10 and 50% of the plants were affected severely by Fusarium wilt. Septoria caused 10 to 80% defoliation in all of the fields. A trace of the plants were infected with the aster yellows in a field near Savannah. (R. C. Baines, Emergency Plant Disease Prevention Project).

MICHIGAN: Early varieties in the Detroit market garden area visited during the week ending August 28 showed early blight. A few plants were killed by Fusarium wilt. No bacterial canker was seen but the disease is said to be found in this area on plants grown in the South and shipped in for field planting. Anthracnose was found on an occasional fruit in one commercial planting.

During the week ending September 11, anthracnose was found in all plantings inspected in the vicinity of Benton Harbor. It was severe

on the Stokesdale variety and less so on Rutgers. The disease was not severe around Grand Rapids but was found in all plantings there also. Early blight was present in all plantings inspected in southwestern Michigan. Spraying to control the disease had been done near Saint Joseph but not in other areas visited. Bordeaux at a strength of 4-2-100 is used for 2 sprays, 8-4-100 for succeeding applications. Control of the blight was possible this year only where the sprays were applied carefully and regularly. One grower near Hayland never sprays for disease but practices crop rotation and keeps his field as clean of weeds as possible. Only 10% of his vines were damaged by early blight. Because of wet conditions earlier in the season, all vegetable plantings in southern Michigan are more or less overgrown with grass and weeds. This no doubt contributes to the spread of disease.

Continuing the survey of the preceding week, during the week ending September 18, tomatoes were inspected in the vicinity of Lake Odessa and along the extreme southern boundary of the State. Early blight had caused about 10% defoliation with a few fields less severely affected. This is an area where little or no spraying is done. The small amount of early blight is believed to be largely due to crop rotation in this area. Over the State generally frost has killed tomato vines. (J. A. Harris, Emergency Plant Disease Prevention Project).

MINNESOTA: Phytophthora rot, probably P. infestans, of the fruit was found at Hollandale, Owatonna, and in plantings north to St. Paul. There is little loss of tomatoes in the field from this rot. (Ian W. Tervet, Emergency Plant Disease Prevention Project).

IOWA: (September 20 to 25, from Ames to eastern boundary in vicinity of Clinton, then south along the Mississippi River) Septoria leaf spot was prevalent and severe in all fields, resulting in 30 to 75% defoliation. The fruit set and yield, in general, was heavy, indicating relatively late infection. From 8 to 10% of the fruits showed sun scald as a result of the defoliation, and 12% showed secondary decay following injuries. The fruit was generally free from blemishes except for 1 to 2% bacterial spot (Xanthomonas vesicatoria), and a trace of anthracnose. Fusarium wilt was observed in all fields, accounting for 1 to 8% kill, averaging 2 to 3%. (T. W. Bretz, Emergency Plant Disease Prevention Project)

MISSOURI: (Week ending September 25, from the Iowa boundary south along the Mississippi River to the vicinity of St. Louis and up the Missouri River Valley to Columbia.) In the commercial plantings of tomatoes, Septoria leaf spot was prevalent, accounting for an average defoliation of about 40%. The fruit set and yield was heavy, however, indicating late infection. As a result of the defoliation, 3 to 5% of the fruit showed sun scald. An average of 1 to 2% of the fruits showed bacterial spot. From 5 to 8% secondary fruit decay was noted following growth cracks and other injuries. From a trace to 5% killing from Fusarium wilt was noted, averaging about 2%. (T. W. Bretz, Emergency Plant Disease Prevention Project)

COLORADO: Only a few plants were found infected with curly top (virus) or bacterial canker in Mesa County. A trace of Fusarium wilt was found in all tomato fields inspected in Mesa County.

Mosaic, common type, is widespread in Mesa County. In one field 50% of the plants were infected, while in others from a trace to 5% of the plants expressed symptoms. In the vicinity of Manzanola in Otero County, only a trace of infection was found on tomato plants in the entire tomato-producing area. In Otero County 2/3 of the acreage is seeded directly in the field; while in Mesa County the entire acreage is transplanted, most of the plants being shipped in from Nevada. Possibly the method of planting may explain the difference in prevalence of tomato mosaic between these 2 areas. (E. W. Bodine, Emergency Plant Disease Prevention Project, September 12 to 18)

NEW MEXICO: Diseases observed on tomato may be listed as follows: on September 7, in Sierra County at Derry, root knot and early blight were causing very slight damage in 1-1/2 acre; September 8, Fusarium wilt was causing slight damage in 4 acres at Berino; September 14, curly top and blossom-end rot were causing very slight damage in 8 acres, and root knot was causing moderate damage and blossom-end rot very slight loss in 1 acre, at Portales in Roosevelt County; September 15, in De Baca County, at Fort Sumner, Fusarium wilt slight in 3 acres; September 16, in Socorro County Fusarium wilt very slight in a half-acre planting at Socorro; September 17, root knot causing 10% loss in 20 plants in a garden at Albuquerque in Bernalillo County; September 18, in 0.2 acre at Espanola in Rio Arriba County, Fusarium wilt slight, and phosphorus deficiency causing severe damage. (Wm. G. Hoyman, Emergency Plant Disease Prevention Project)

CALIFORNIA: Three days during the week ending September 18 were spent in Yolo County with special attention given to the tomato crop. Since Fusarium wilt(F. bulbigenum var. lycopersici) was known to occur in this county but its extent was not definitely known, it was thought advisable to make a survey for the disease in this important tomato growing region, particularly in fields where it had not been previously reported. Most of the tomatoes in Yolo County are grown in the vicinity of Woodland with a few near Clarksburg in the southern tip of the county. A large number of fields in the Woodland area were examined. Some of the fields were too mature to get a clear picture of what the disease situation had been.

In the area directly north of Woodland, which is the older tomato growing section of the county, a high percentage of the fields showed at least a few plants with fusarium wilt. Four large fields totaling over 100 acres showed a large number of diseased plants. In one of these there was about a 20% infection in one section of the field. These fields had been in tomatoes the previous year. In the Yolo area, a few miles to the west, no plants with Fusarium wilt were seen. This is one of the newer tomato growing sections. Fusarium wilt was found in 2 fields in the Clarksburg area. On the whole this area was found to be relatively free from tomato diseases.

Nematodes [presumably root knot, Heterodera marioni] were found to be severe in parts of 3 fields near Woodland and a trace of damage was found

in another field.

Scattered plants with curly top virus were found throughout the county. The numbers, however, were not great enough to cause any great damage.

Another virus disease (probably one of the severe mosaics), causing a streaking of the fruit and apparently causing death of the tips of plants seemed to have done some damage.

Evidence was present that mite damage had been rather severe.

The results of this survey in Yolo County were given to the office of the County Extension Service at Woodland. Comparison of notes showed that Fusarium wilt is more general in the region near Woodland than had been supposed. Two new fields were added to the list of those infested with nematodes. This information should prove valuable to the County Extension office when giving advice to the tomato growers next year. (Horace L. Barnett, Emergency Plant Disease Prevention Project)

BACTERIAL RING ROT OF POTATO

MAINE: Ring rot (Corynebacterium sepedonicum) is apparently the disease causing the greatest concern in central Maine this year. Although I did not visit Aroostook County this week, reports indicate that ring rot is causing considerable concern there also.

According to Mr. Roy Bacon, potato seed inspector, it was thought last year that ring rot was well under control, but for some reason it has appeared again this year in the most serious proportions yet experienced in central Maine.

Ring rot was found in one field in Milo where the potatoes were being dug; it was generally prevalent and a trace of rotted tubers was showing up. In another already dug field at Corinna many ring rot tubers were found scattered over the field. Mr. Bacon estimated that the field had produced probably 2% of rotted tubers at digging time.

Some time was spent interviewing potato growers and potato dealers. Among farmers there was considerable difference of opinion concerning ring rot. Some growers had had ring rot last year but were free of it this year. Many others had it this year for the first time. A general reply made upon questioning the grower was "I don't know anything about ring rot."

A dealer company at La Grange, expressed the opinion that ring rot is becoming a serious problem in central Maine, stating that at least three-fourths of the potatoes being marketed with them contained at least some ring rot. Several lots brought in for sale as "table stock" had been rejected because of the large percentage of ring rot. This company had had 100 acres of Chippewas refused certification because of ring rot.

A dealer in Dexter stated that a great deal of ring rot had been coming into his warehouse this year. He said also that prior to this year ring rot had been no problem, but that it is particularly serious with Katahdins this year.

Another very large dealer in Dover-Foxcroft, recognized the incidence of ring rot this year but presented a much less pessimistic picture of the situation. (Robert C. Cassell, Emergency Plant Disease Prevention Project, September 27).

VERMONT: (See also the late blight report) Ring rot was found in some degree in 2 Essex Junction fields. It was also reported by Mr. Kenneth Varney to be present in Waitsfield. Mr. H. L. Bailey, director of plant pest control in Vermont, said that ring rot must be fairly well distributed over the State this year. Mr. Bailey has evidence that ring rot was introduced into Vermont this spring in carload lots of so-called "selected" seed. This is in addition to some build-up of ring rot in locally-grown seed. (Robert C. Cassell, Emergency Plant Disease Prevention Project, September 27).

WEST VIRGINIA: Ring rot was found affecting 4% of the tubers in one large field (in the potato section of southeastern West Virginia). (C. F. Taylor, Emergency Plant Disease Prevention Project, September 13 to 18).

WISCONSIN: During the week ending September 25, ring rot was found in wilt hills in Dodge and Fond du Lac Counties. In the following week's survey the rot was found in one lot of Chippewa grown in Langlade County. At Waupaca several carloads of North Dakota-grown Triumphs were being unloaded and re-run for the table-market. One carload examined was found to contain a high percentage of ring rot. (Edwin E. Honey, Emergency Plant Disease Prevention Project)

COLORADO: (September 12 to 18) Ring rot was found to be widespread in the following counties: Delta, Garfield, LaPlata, Mesa, Montezuma, Montrose, and Ouray. Several fields inspected in LaPlata County near Durango showed a very high percentage of the plants infected. In 1 small field 100% of the plants were diseased. In Ouray County many fields showed 3 to 8% infection. At Olathe in Montrose County, the Bliss Triumph variety showed a high percentage of ring rot and breakdown reported in some shipments. In Mesa County, ring rot infection was rather prevalent in the early crop.

(September 26 to October 2) In Weld County ring rot appears to affect mostly the Katahdin variety. Most of the Katahdin fields show only a trace to 1% of infection, but in a few fields as high as 30 to 40% of the plants were infected. Under the infected plants, tubers will show infection as follows: 1 or 2 complete decay, 1 with beginning symptoms, the remainder no apparent symptoms.

In fields with a high percentage of infection it appeared that the cutting knife had not been disinfected properly and had therefore transmitted the disease to healthy tubers. These growers did not follow the recommended sterilization with boiling water, or mercuric chloride 1-500, but instead used a formaldehyde solution which is not effective for ring rot.

Ring rot was recorded also in Bliss Triumph and Pawnee varieties in Weld County. (E. W. Bodine, Emergency Plant Disease Prevention Project).

NEW MEXICO: A moderate amount of ring rot and wilt was observed in a 15-acre field at Cloudcroft, Otero County, September 10. (Wm. G. Hoyman, Emergency Plant Disease Prevention Project)

IDAHO: On September 17 at Wilder I noted a considerable amount of ring rot on tubers as they went over the sorting table. Near Burley one field of White Rose visited September 20 showed about 10% ring rot.

At Blackfoot, September 27, considerable amounts of Fusarium wilt, ring rot, and jelly-end rot on potatoes made sorting of the tubers very difficult. One bad lot was observed in the field. Judging from the observations made in this survey the loss in stored potatoes is potentially very great.

The main producing center for certified seed potatoes, around Ashton, was visited September 29 and some survey was made but most information was gained from field inspectors. The ring rot problem in seed potatoes is a difficult situation this year. (Earle C. Blodgett, Emergency Plant Disease Prevention Project).

REPORTS ON POTATO LATE BLIGHT

MAINE: Late blight tuber rot (Phytophthora infestans) was found in Milo, Corinna, Newport, Atkinson, Sangerville, La Grange, and Dover-Foxcroft. Late blight is more severe in central Maine this year than usual. Considerable amounts of tuber rot are showing up already in the fields. Reports indicate that this is true also in the Aroostook section. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 27).

NEW HAMPSHIRE: Late blight is general in southern New Hampshire, causing slight to moderate damage to the foliage. Only in Barnstead were blighted tubers found. Blight was recorded on Katahdin, Sebago, and Sequoia. The disease had been held in check for the last 2 weeks by dry weather, and there probably will be no serious loss from late blight in southern New Hampshire this year. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 23)

VERMONT: Late blight is worse throughout Vermont this year than it has been for years. In Essex Junction, Burlington, and Colchester, as much as 2 or 3% tuber rot was estimated in some fields examined. Mr. Kenneth Varney reports that although late blight occurred in 2 well sprayed fields in West Hardwick, there was very little tuber infection. Limited samplings in 2 severely attacked fields, in Coolbeth and Waitsfield, indicate that 25% of the tubers will show late blight tuber rot by digging time. In 2 fields in Essex Junction the amount of tuber rot approached 20 to 25%, but the rot here was due to combined attack of late blight, black leg, and ring rot. It was reported that a 30-acre field in northern Vermont would not be dug because of rots. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 27).

MASSACHUSETTS: On September 2 and 3, late blight was observed in practically all fields visited in the western hill towns of Hampshire and Franklin Counties and in several widely scattered sections of Berkshire County. It was observed for the first time in Hampden County on

August 31 as traces to very light infections in sprayed fields, and as light to moderate infections in unsprayed garden plots. It remained active in most of the Valley fields of Hampshire and Franklin Counties causing premature death of the tops in unsprayed and poorly protected plantings. It was first reported in Middlesex County on August 26, in Essex County on September 15, and in Bristol County about August 23 in the Dartmouth section. By the first week of September, it was widely distributed all over the State. In no instance, however, had it caused even moderate damage to the tops or tubers where the vines had been properly protected with fungicide. Where different varieties were growing in the same fields, all including Sebago showed about the same amount of infection of tops. In one poorly protected field in Berkshire County (September 2), even the tubers of Sebago showed about the same extent of decay as Green Mountains in the same field. In general, however, owing to infrequent and light rains, tuber decay is negligible except in an occasional garden or low, wet field. (Surveys made by Robert C. Cassell, Emergency Plant Disease Prevention Project, August 25 to September 21, summarized by C. C. Boyd and Thomas Sproston, Massachusetts State College. The summary includes some material reported in earlier issues of the Reporter).

RHODE ISLAND: To my knowledge no late blight was reported in Rhode Island this year. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 13)

CONNECTICUT: I have found no late blight in Connecticut this year and was unable to find any report of its presence. (Robert C. Cassell, Emergency Plant Disease Prevention Project.)

NEW YORK: Late blight was noted in commercial fields and gardens in Tompkins, Oswego, and Onondaga Counties. Generally home gardens were observed to be most severely affected probably because of failure to spray or dust. Commercial fields having plants which exhibited considerable spray or dust material appeared to have been satisfactorily protected. (L. J. Tyler, Emergency Plant Disease Prevention Project. September 27)

NEW JERSEY: The early and medium early crop in Mercer County was 75 to 80% harvested. Very light late blight rot was found on harvested tubers. In a barn where Cobblers were being graded no late blight was found. Late blight was observed to a slight extent in one field near Windsor. (E. A. Walker, Emergency Plant Disease Prevention Project. September 6 to 11)

WEST VIRGINIA: In the fields examined in the potato section south of Elkins, the early destructive epiphytotic of late blight had resulted in very little tuber infection. In 1 heavily sprayed field late blight tuber rot does not exceed 1% of tubers affected. In 3 other large fields, 2 of which were heavily sprayed, no late blight was found on tubers. In 1 field, dusted with a hand crank-type duster, late

blight was not controlled, and yield was reduced from a normal yield for that farm of over 300 bushels per acre to approximately 150 bushels, at least half of which will drop through a standard sorting chain. In well-sprayed fields normal yields are being obtained. Yields are negligible in unsprayed fields. (C. F. Taylor, Emergency Plant Disease Prevention Project. September 13 to 18).

OHIO: Late blight was controlled by spraying in all the fields examined in eastern and northeastern Ohio. (H. R. Harris, Emergency Plant Disease Prevention Project. September 27 to October 2).

ILLINOIS: On September 7, 3 acres of Idaho Russet and 2 acres of Katahdin potatoes on a farm in Bureau County were examined without finding late blight. These plantings had had 2 applications of Bordeaux. Another 2 acres of the Katahdin variety, sprayed 4 times with Bordeaux and located in the same county, showed no blight. On September 8, in the same county, 2 fields of 5 acres and 1 field of 3 acres which had had no sprays were examined, and no late blight was found. On September 8, in Winnebago County, 1 acre of Katahdin and 3 acres of Minnesota Russets, both of which had not been sprayed, were examined and no late blight was found.

On September 8 in Stephenson County, in 1 field, variety unknown, about 50% of the plants were diseased and carried about 11% infection.

On September 9, in JoDaviess County, late blight was found in abundance, and in several fields small areas of plants were almost killed by the disease. In 1 3-acre field, 100% of the plants were infected, and on these plants 50% of the leaves bore lesions. In a 1-1/2- acre field, 100% of the plants were again diseased and about 52% of the leaves on these plants bore lesions. In a 3-acre field, 100% of the plants were diseased, and 50% of the leaves bore late blight lesions. In a 2-acre field, 100% of the plants were diseased and about 51% of the leaves bore lesions. In a 2-acre field, 100% of the plants were diseased but only about 30% of the leaves showed lesions. In another 2-acre field, 29% of the plants were diseased and only 20% of the leaves on these plants showed lesions. None of these JoDaviess County fields had been sprayed.

In Whiteside County, on September 9, late blight was observed in 2 fields of Cobblers amounting in total to about 44 acres. These potatoes were ready to dig and the vines were too near dead from old age to give very accurate counts. However, it was readily observed that blight on the leaves was very light compared with what was seen in JoDaviess County. Here, 10 applications of Spray-Cop had been used at the rate of 6 lbs. to 100 gals. of water, and 3 of these sprays had contained lead arsenate. These counties are all located in the northwestern part of the State; JoDaviess in the extreme northwestern corner. (Leo R. Tehon, Illinois Natural History Survey. September 21)

MICHIGAN: Late blight made its appearance in a few sprayed fields south of AnnArbor. Unsprayed potatoes were generally killed down by blight in the Detroit market garden area and where grown in home gardens over the southern portion of the State. (H. R. Harris, Emergency Plant Disease Prevention Project. September 18)

WISCONSIN: Inspection of potato fields was made in Rock, Walworth, Racine, Kenosha, Milwaukee, Ozaukee, and Washington Counties during the week ending September 18. Late blight of potatoes was not encountered. It was said to have been present in slight amount earlier but if so it occurred on early varieties now dug or had discontinued activity. During the succeeding week, late blight was found present on tubers from random hills in a few unsprayed fields in Dodge and Fond du Lac Counties. Active blight infection on potato tops was not observed in these counties or in Ozaukee and Washington Counties also surveyed. (Edwin E. Honey, Emergency Plant Disease Prevention Project).

MINNESOTA: At Hollandale in southeastern Minnesota, late blight tuber rot was present in small quantities in most fields, and losses from this disease probably will be light. (Ian W. Tervet, Emergency Plant Disease Prevention Project. September 18)

SOUTH DAKOTA: A survey of late blight tuber rot in potatoes was made in Deuel, Codington, and Clark Counties in eastern South Dakota during the week ending September 26. Only slight late blight vine infection had been reported earlier in the season in eastern South Dakota and the relative scarcity of sporulating lesions did not warrant undue alarm for the crop. However, rather heavy tuber infection was found in several fields in Deuel County, somewhat less in Codington, and a trace in Clark County.

In Deuel County, low areas in fields had a high percentage of infected tubers, some hills having every tuber infected, while the tuber infection in bottom land would range from 15 to 35%. Scattered infections were found on high well-drained ground, fields ranging from a trace to about 2% infected tubers. In this county an average of nearly 2% of the tubers were infected. The growers were selecting, as far as possible, only sound tubers at digging, but examination of stored potatoes near Goodwin showed that many blighted tubers were in the bins. One bin of Early Ohios averaged close to 1% of evidently infected tubers, and stored Triumphs about 0.1%. Late-planted fields of Ohios and Triumphs were more heavily infected than early-planted fields. In general, Ohios had more infected tubers than Triumphs and Cobblers, possibly because of the more superfical tuber set in the Ohios.

Less blight was seen in the Watertown area of Codington County but tubers from poorly drained areas were frequently infected. Fields examined showed a trace of late blight rot, high ground apparently being free from the disease. It was reported in Watertown that 20 to 25% of the tubers from a low area in one field were infected. Examination of table-stock Triumphs and Cobblers at grading showed a trace of late blight rot.

In Clark County, late blight tuber rot was infrequently seen either in stored tubers, at grading, or in the field. A trace of late blight rot was present in poorly-drained areas in a few fields but the incidence of the disease is much less than in the other 2 counties examined. (Ian W. Tervet, Emergency Plant Disease Prevention Project)

COLORADO: No late blight was found in any of the following counties:

Delta, Garfield, LaPlata, Mesa, Montezuma, Montrose, and Ouray. (E. W. Bodine, Emergency Plant Disease Prevention Project. September 21)

REPORTS ON OTHER POTATO DISEASES

MAINE: (August 22 to 28). Early blight (Alternaria solani) was found rather generally but in no case was the damage more than moderate.

Black leg (Erwinia phytophthora) was found generally through the State. Definite records were made of its occurrence at Scarboro, Corinna, Amity, Presque Isle, Fort Fairfield, and Caribou. When found, prevalence was general in the field and damage ranged from slight to moderate. At Caribou 20% of the plants had black leg.

Leafroll (virus) was found in 1 field in Fairfield, Caribou, and Amity; 2 fields in Corinna; and 3 in Topsfield. Counts were made by Dr. Donald Folsom in some fields: 30% infection was found at Fort Fairfield and Caribou; the most severe infection was at Amity where a 54% count of infected plants was obtained.

Mild mosaic (virus) was general in 1 field in Hodgdon and in 1 in Bridgewater. The Hodgdon field with 30% infection was most severely affected.

Rugose mosaic was observed in 1 Bridgewater field, where it was general but causing only slight damage.

Injury from aphids, flea beetles, and tipburn were evident throughout Maine but less severe than farther south in New England.

(September 19 to 25). Black leg is unusually severe in central Maine this year. Mr. Roy Bacon, potato seed inspector, stated that 2 or 3 fields of the 35-acre class in the Dover-Foxcroft area were rejected for certification because of blackleg. A dealer in Dover-Foxcroft was particularly concerned about the amount of black leg coming into his warehouses. The disease was found in fields in Milo, Newport, Atkinson, and Dover-Foxcroft. Yield reduction ranged from a trace in some fields to 12% in a Newport field of Sebagos.

Scab (Actinomyces scabies) was generally prevalent in some fields in La Grange, Newport, and Atkinson. Damage ranged from very slight to moderate.

Rhizoctonia (R. solani) was found in 1 field each in Newport, Atkinson, and La Grange. In all cases the infection was very slight to slight.

A severe case of leaf roll was encountered in Dexter. A big grower was forced to withdraw 120 acres from certification because of this disease. His Green Mountains had 6% and his Chippewas 25% leaf roll.

A slight case of hollow heart (non-parasitic) was found in a 10-acre field of Sequoia in La Grange.

For the first time in the potato history of Maine, acreage planted to the Katahdin variety this year exceeded that planted to Green Mountain. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

NEW HAMPSHIRE: Early blight was found in all fields observed. Moderate damage was recorded in Pittsfield and moderate to severe damage in Northwood.

Blackleg was found in Litchfield, Hudson, and Barnstead; general in

prevalence but causing slight damage.

Scab was found in 2 fields in Northwood and in 1 in Barnstead, local to general in the fields and causing very slight to moderate damage.

Rhizoctonia was general with very slight damage in 1 field in Litchfield.

Leaf roll (virus) and purple top (? aster yellows virus) were found in Litchfield, the former generally distributed but causing slight damage in 1 field, the latter on 2 or 3 isolated plants in 1 field.

In Barnstead one entire field of 5 or 6 acres was 99% affected by hollow heart. The variety was Sequoia. Across the road a 3- or 4-acre field of Katahdins was at least 70% affected.

Tipburn, wire worm, and grub injuries were also noted. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 12 to 18)

VERMONT: Mr. H. L. Bailey, director of plant pest control in Vermont, reports black leg to be unusually widely distributed in the State this year. It was observed causing slight to moderate tuber rot in 2 Essex Junction fields.

A very severe case of scab was found in a 12-acre field in Essex Junction. The scab was of the deep crater type and fully 95% of all tubers were affected. A second large field in Essex Junction was almost as badly affected. Two other fields in Essex Junction showed a general infection but only slight damage. Another field, in Colchester, was also affected to a slight extent. Mr. Bailey stated that scab was severe all over Vermont this year. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 19 to 25).

MASSACHUSETTS: Scab is the most common and serious disease in home gardens this year, and it is more damaging to commercial crops than usual apparently because many fields heretofore not cropped to potatoes were planted this year. Even on old potato land, scab is somewhat more noticeable now during harvest than in most past seasons. Greatest damage appears to be on Chippewa and Green Mountain. One case of 100% tuber infection and 40 to 50% loss in value was observed in Essex County on September 15, and a somewhat less severe case in Pittsfield, Berkshire County, September 2.

"Rhizoc" hills were observed in all fields visited, varying from very slight to moderate. Many missing and weak hills could be attributed to early season sprout infections.

Purple top was found generally spread through the 4 fields visited in Franklin and Berkshire Counties, September 2 and 3. A large home-garden planting (about 1/2 acre) of Katahdins in Pittsfield, bordered on 3 sides by grassland, showed practically 100% early-stage top symptoms. Katahdins generally appear to be more strikingly affected than other varieties.

Leaf roll was observed in late plantings of Green Mountain fields in 3 different towns of Berkshire County, September 2, including a portion of 1 field planted with home-grown seed stock that showed at least 25% of the plants affected compared with about 8 to 10% in adjacent rows from certified seed.

Scattered light attack of black leg was observed in Green Mountain and Katahdin fields in Berkshire and Franklin Counties (September 2, 3).

General light to moderate amounts of early blight were the rule in fields and gardens in the 8 counties visited, except 1 case of severe damage in Windsor, Berkshire County.

Green Mountains just coming in to bloom on one farm in Mt. Washington, Berkshire County, showed general but light infection with mild mosaic. (Surveys made by Robert C. Cassell, Emergency Plant Disease Prevention Project, August 25 to September 21, summarized by O. C. Boyd and Thomas Sproston, Massachusetts State College).

RHODE ISLAND: Most fields were too nearly mature to identify early blight positively, but its presence was definite in 2 fields in Portsmouth and 1 in Slocum. Scab was found only locally and in small amounts. Apparently it is not a serious factor in the State this year. Rhizoctonia was general but not important in Portsmouth and Slocum.

The following statement concerning the general potato situation in Rhode Island this year was obtained through conversation with Dr. F. L. Howard of Rhode Island State College:

Only the early-planted potatoes are producing expected fields. Most of the crop was planted late because of early and prolonged cold wet weather, and these late plantings are producing less than 50% of normal. In addition, there is a predominance of small tubers. Probably less than 1% foliage loss was due primarily to disease. The reduction in yield can be attributed to flea beetle injury in May and June; subnormal rainfall retarding tuber development in June and July; and the most severe aphid infestation on record in the State, for 2 weeks from June 20. Aphids destroyed between 50 and 70% of the foliage. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 5 to 11)

CONNECTICUT: A small amount of scab was found in one field in Southington. General and very severe cases were encountered in East Windsor and Milford. In East Windsor the loss in 200 acres was estimated at 5%. Scab was general in Brooklyn and Orange but damage was slight to moderate.

Rhizoctonia occurred generally but with very slight damage in a field in Southington and one in Weathersfield. A trace was found on the tubers in East Windsor and Brooklyn.

Blackleg was causing very slight damage in a field in East Windsor.

Tops were too mature to detect foliage or stem diseases.

Potato yields in Connecticut should be 300 to 350 bushels per acre, but only one grower was found obtaining such yields this year. In general yields were from 150 to 270 bushels per acre. (Robert C. Cassell, Emergency Plant Disease Prevention Project. Surveys September 5 to 11, September 26 to October 2)

NEW YORK: (August 23 to 31) In the Madison, Onondaga, Oneida, Ostego, Schoharie Counties area Fusarium wilt (Z-disease, Fusarium solani var. eumartii) was noted on occasional plants in 8 of the 10 fields visited. Early blight was prevalent to a limited extent in most of the fields, but it was severe and damaging to the plants in only one field (in Onondaga County).

Early blight occurred in the vicinity of Poughkeepsie in Duchess County. Both the potato golden nematode (Heterodera rostochiensis) and the root nematode (H. marioni) were seen on potato roots in fields near Hicksville on Long Island.

(Week ending September 18) Charles Thomas reports that 25 potato fields in Genesee County (muckland potatoes excluded) were examined. Z-disease was prevalent to the extent of 15% in one field and 1% in 3 others. Tuber infection will probably run much higher in these fields. (L. J. Tyler, Emergency Plant Disease Prevention Project)

NEW JERSEY: In Mercer County the early and medium late crop was 75 to 80% harvested. Very light scab was found on the harvested tubers. In a barn where Cobblers were being graded about 5% scab of a mild form was noted. Near Hightstown a field being dug showed less than 5% mild scab. The fall crop, which is used for seed, is making a fair growth in spite of the drought. Slight amounts of hopper burn and early blight were observed in the Windsor and Hightstown sections. (E. A. Walker, Emergency Plant Disease Prevention Project. September 6 to 11)

MARYLAND: Most field and garden plots in Anne Arundel County show some hopper burn and early blight. Stand was generally about 60 to 80% of normal. (E. A. Walker, Emergency Plant Disease Prevention Project. September 6 to 11).

WEST VIRGINIA: In the potato section south of Elkins scab was slight except in one 15-acre field where a heavy loss in value was incurred. In this field all tubers of Irish Cobbler and 75% of Smooth Rural were badly scabbed, while half an acre of Russet Rural was almost free. Considering the varietal acreage distribution, it is estimated that this grower may be able to sort out 1000 bushels of scab-free tubers and have left about 3500 bushels of scabbed tubers, mostly with deep pits. Predisposing factors were a short rotation and active participation in the lime program.

Vascular discoloration resembling that caused by F. solani var. eumartii (Z-disease) affected 5% of the tubers in a large field in which ring rot was present. The injury resembled that due to Z-disease more closely than that caused by blue stem. Sclerotia of Rhizoctonia were found on 37% of the tubers in one field and on a few tubers in all other fields. Soft rots in one field appeared to be correlated with wheel injury caused by the sprayer. (C. F. Taylor, Emergency Plant Disease Prevention Project).

OHIO: (August 30 to September 4) Virus diseases were abundant. In Miami County 2 fields of the Katahdin variety were examined for the presence of virus diseases. The 2 fields, from a common certified seed source, were found to have 8% leaf roll. Tubers from the most severely diseased vines showed a slight net necrosis at the stem end. The fields were sprayed regularly and no evidence of either early or late blight was found.

(September 27 to October 2, eastern and northeastern Ohio) Several fields were examined while being dug. Two fields of the Russet Rural

variety were inspected while still green and making vigorous growth. In all fields where certified seed was not used the crop was reduced due to leaf roll. In the fields still growing a study of the yields of virus-diseased plants and healthy plants was made. Plants showing considerable amounts of virus disease produced only half as many tubers as those free from virus diseases. Growers have long realized that their potatoes "run out" after a few years unless they get new seed stock, but few of them seem to understand the nature of virus diseases, their symptoms, and how they are spread.

Lesions of early blight were found only on an occasional leaf. Scab was causing damage to about 10% of the tubers. One field being dug showed a severe breakdown on the stem end of approximately 20% of the tubers. The lesions had the appearance of being due to drought injury and inquiry revealed that the field had passed through a rather severe drought period when the tubers were nearing maturity. (M. R. Harris, Emergency Plant Disease Prevention Project).

INDIANA: Late potatoes of the Katahdin and Chippewa varieties on the muck soils in northwestern Indiana had good foliage and were fairly free from leaf diseases. One field showed slight tip-burn injury and 2 nearly mature fields had moderate early blight infection. (R. C. Baines, Emergency Plant Disease Prevention Project. Week ending August 28)

MICHIGAN: (September 6 to 11) Many fields in southwestern Michigan were examined during the past week. In all small plantings which were not sprayed, a combination of early blight and late blight had killed most of the plants. Commercial plantings were sprayed and control of early blight was practically complete. More destructive to the yield of potatoes in this area than blight are the virus diseases, especially leaf roll. Leaf roll was present in varying degrees in all fields examined. It ranged from a trace to over 50% and would average about 20%. One or two rather large fields appeared to have few plants not infected with the virus. Some digging of healthy and badly diseased leaf roll plants showed by comparison as much as a 50% reduction in yield.

On the night of September 10 and to a lesser degree the following night a frost killed many truck crops in the Grand Rapids area and northward. Potatoes were damaged to a lesser degree but rather severely. In muck areas the damage was most severe and in some places potatoes were frozen to the ground.

(September 13 to 18) Virus diseases, principally leaf roll, were very common in most fields inspected in southern Michigan. (M. R. Harris, Emergency Plant Disease Prevention Project).

WISCONSIN: August 18 to 21 was spent in company with Professor J. W. Brann of the Department of Plant Pathology, in examination of commercial potato fields in parts of Marquette, Waushara, Waupaca, Shawano, Marathon, and Portage Counties. Early potatoes (Triumph and Irish Cobbler) were being dug. Early planted Pontiacs severely affected with hopper burn and flea beetles also were being dug in Portage County. Only a little to a moderate amount of scab was observed on dug potatoes. In Portage County the later plantings stood up much better than early plantings and this was true of all varieties. Yellow dwarf (virus) was

observed both as primary and secondary infections. In some fields varietal mixtures, for example, Green Mountains, Cobblers, and Russet Rurals with Chippewa, indicated a poor source of seed or a holding over of seed for several years. Fusarium wilt and mild crinkle mosaic (virus) were also observed and traces of spindle tuber (virus) in some fields.

During the week ending August 28 an inspection tour was taken in company with Professor Brann to Columbia, Green Lake, Waushara, Portage, Marathon, Langlade, Oneida, Lincoln, Adams, and Sauk Counties. Water damage was evident in many potato fields and especially noted in Langlade and Oneida Counties. Early rains and high water caused from 3 to 10% damage in some fields, delayed planting, and made it difficult or impossible to cultivate, resulting in many instances in quite weedy fields. Quack grass was prevalent in Oneida County fields. Recent frost damage was observed in a few low spots in Oneida County.

A necrosis, particularly of the upper stem and leaf blades, accompanied by a brittle stem indicating a nutritional deficiency of some kind, possibly calcium, was observed in one field of Russet Rural in Oneida County.

A purpling of the upper leaves, especially on Triumph plants, was observed in Oneida County. There was some question as to whether this was the virus disease designated as purple top or whether it was caused by nutritional or other disturbance. Hair sprout (non-parasitic) up to about 2% was found on Sebago in Marathon County.

Yellow and green dwarf were observed generally in Green Lake, Waushara, Portage, and Marathon Counties. Spindle tuber and mild crinkle mosaic were widely distributed but not commonly found. A field of Triumph in Oneida County showed 20% infection by the latter disease. Wilt was found in most fields. Early blight and hopper burn were also noted.

During the week ending September 11 inspection of potato fields was made in Bayfield, Ashland, Sawyer, Washburn, Burnett, Polk, Rusk, Price, and Taylor Counties. Some storm injury resulting from strong winds and rain was observed on potato vines in most of the counties. The first severe killing frost of autumn occurred in Rusk County on the night of September 10. Strong winds and clouds had apparently prevented such a frost the 2 preceding nights. On September 11 garden plants and potatoes were found killed in Rusk, Price, and Taylor Counties. In Wood County most potato fields appeared uninjured.

Yellow dwarf, from a trace to 2%, was found in all counties inspected. A trace of green dwarf was found in Polk County and a trace of spindle tuber in several fields in Burnett County.

Considerable loss of acreage from drowning out last spring has occurred. A 10-acre field in Rusk County was under water so long that only 50% of the field will be harvested. In some cases replanting with early varieties was attempted. A 4-acre field of Katahdin was replanted to Triumphs in Polk County.

Wilt was generally found, occurring in most fields. Hopper burn was causing severe damage in a large proportion of the fields, and less damage in others. Early blight was widely found but was less damaging.

Potato fields were inspected in Rock, Walworth, Racine, Kenosha, Milwaukee, Ozaukee, and Washington Counties during the week ending Septem-

ber 18. In all counties digging of early varieties was in progress or completed. Hopper burn was much more severe in unsprayed or poorly sprayed fields and was by far the most serious cause of loss encountered during the trip. Some early blight was observed. In the majority of fields examined that were not completely matured or killed by frost at least a trace of wilt was found. Frost damage was spotty in all counties and was especially severe in Walworth and the western sections of Kenosha and Racine Counties.

The most recent application of spray noted in Rock County was made last week. In eastern Kenosha County some spraying was still in progress on September 16.

Yields per acre appear to be running less than last year even in irrigated fields. In some irrigated and sprayed fields in Rock County Cobblers were expected to yield 500 bushels per acre. Early Ohio and Katahdin dug in Walworth County yielded about 180 bushels per acre or about 85% of last year's yield.

Fields in Ozaukee, Washington, Dodge, and Fond du Lac Counties were inspected during the week ending September 25. A trace of yellow dwarf was present in Ozaukee and Washington Counties and spindle tuber was found in Ozaukee and Dodge Counties. Fusarium wilt in small amount was common in all these counties. Hopper burn and flea beetle injury was quite severe. The killing frost of September 10 had affected fields rather spottily in these counties, and frost injury had been increased by later light frosts. However, at least portions of many fields were still uninjured.

Cobblers being dug in Ozaukee County yielded about 150 bushels per acre; Rural New Yorker in Fond du Lac County about 125 bushels. The dry season appears to be responsible for reduction of yield in these counties.

During the week ending October 2, inspections of potato fields, potato storage houses, and shipping points was made in Oneida, Langlade, Portage, and Waupaca Counties. In most warehouses the greatest commercial loss appeared to be caused by scab. Rejections were running from a trace to 60% with averages nearly half in some sections.

Considerable damage was found in one lot of Triumph and in one lot of Pontiac in Portage County from a peculiar cracking of the tubers which took place as they came out of the ground at the time of digging. Spindle tuber was evident in small amount in lots brought in by farmers at most of the warehouses inspected. There was relatively little prevalence of tubers showing Rhizoctonia sclerotia or scurf on the surface, although a small amount was observed at most warehouses.

In Portage County a surprising number of fields had not been touched by frost and were still green and growing or had but a portion of the field frosted. One grower starting to harvest such a green field of Russet Rurals discontinued digging because he believed the yield would be increased by 25 bushels per acre if the frost held off for a week or 10 days longer. Some Fusarium wilt hills were evident in these green fields. (Edwin E. Honey, Emergency Plant Disease Prevention Project)

SOUTH DAKOTA: Scab and wireworm injury are causing some concern to growers in Deuel, Codington, and Clark Counties in eastern South Dakota,

scab occasionally being severe even on land hitherto not used for potatoes or on which potatoes had not been grown for many years. (Ian W. Teruet, September 26)

COLORADO: (September 12 to 16) Early blight is general in Montezuma, La Plata, and Montrose Counties. Jelly end rot (Fusarium javanicum var. radicicola) is reported to be rather prevalent in Mesa County in some of the early fields.

Powdery dry rot (F. trichothecioides) was rather prevalent in the Bliss Triumph variety in Rio Grande County. At least 5 to 8% of the tubers of this variety showed infection after being washed and graded. Some difficulty has been encountered in potato shipments from this wound parasite. (E. W. Bodine, Emergency Plant Disease Prevention Project).

NEW MEXICO: A moderate amount of psyllid yellows induced by the potato psyllid, and a heavy attack of early blight, were each observed in 1 field at Cloudcroft in Otero County, September 10. (Wm. A. Hoyman, Emergency Plant Disease Prevention Project).

IDAHO: A potato field at Fruitland showed about 10% virus disease (September 15). A field of White Rose near Burley showed about 3% black leg. Many fields observed showed severe Fusarium wilt injury (September 20). (Earle C. Blodgett, Emergency Plant Disease Prevention Project).

DISEASES OF SWEETPOTATOES

NEW JERSEY: During the week ending August 21, farms were visited in Salem, Cumberland, Cape May, and the western part of Atlantic and Gloucester Counties. Sweetpotato fields were suffering severely from drought. Plants were making little growth and the leaves were pale green to yellowish in color of the usual dark green. Stem rot (Fusarium bulbigenum var. batatas) was observed in most fields in varying degrees. This disease is easily recognized by the yellowish leaves, blackened and dead stems, and missing hills. Most fields visited were averaging about 1% of the plants affected. Percentage counts in 1 3-acre field near Buena Vista showed 20, 20, 40, 40%, or an average of 30% of affected plants or missing hills. Another field near Halltown also had 30%. Several small (1-acre each) fields in the vicinity of Fairtown showed 10%. Observations may be summarized as follows: 30% in 2 fields totalling 4 acres; 10% in 3 fields totalling 4 acres; 8% in 1 6-acre field; 6% in 1 1-acre field; 5% in 1 10-acre field; 4% in 1 1-acre field; 3% in 3 fields totalling 23 acres; 2% in 4 fields totalling 33 acres; 1% in 24 fields totalling 308 acres; none in 8 fields with 80 acres -- average 3.2% in 48 fields totalling 470 acres. (E. A. Walker, Emergency Plant Disease Prevention Project).

MARYLAND: Good stands were observed in the Glenburnie area in Anne Arundel County. Growth had been retarded slightly by the drought and

the crop will mature later than usual. Stem rot was observed in most fields, although the average was not over 3 to 5% affected hills. (E. A. Walker, Emergency Plant Disease Prevention Project).

KENTUCKY AND TENNESSEE: Observations on sweetpotatoes are summarized as follows:

State and County	Variety	Amount of disease -- %		Remarks
		Stem rot	Missing hills	
Tennessee - Aug. 23-28				
Madison	--	50	Much more	
	--	15	15	
Gibson	--	1 plant		2 acres
Weakley	Nancy Hall	12-15		15 acres
	Porto Rico	5		25 acres*
Gibson	--	1		
Aug. 30-Sept. 3				
Kentucky				
Fulton	--	23	43	2 acres
Hickman	--	10	21	5 acres
Graves	--	6	10	2 acres
	--	21	20	2 acres
	Nancy Hall	22	4	
	Porto Rico	3	5	
	Nancy Hall	18	9	
	Nancy Hall	21	18	
McCracken	Nancy Hall	6	22	
Davies	Nancy Hall	12	8	
Jefferson	Nancy Hall	10	8	
	Maryland Gold	None seen		
	Nancy Hall	10		
	Maryland Gold	1 plant		
	Nancy Hall	8	11	
	Nancy Hall	14	9	Small amount
	Porto Rico	4	5	of black rot
	Nancy Hall	10	13	
Fayette	--	None seen		
Sept. 21-25				
Tennessee				
Davidson	Nancy Hall	Trace		1/4 acre
	--			1/2 acre dis-
				ease free
Robertson	Nancy Hall	12		Small field
	--	Less than 1		
Kentucky				
Todd	--	6		1-1/2 acre
				Also 0.5% Mosaic
Christian	--	Ten acres disease-free		

* In this Weakley County field cotton had been planted for 9 years in succession prior to 1942, and in 1942 vetch and soybeans were planted. Certified Porto Rico seed from Louisiana was used. Beds were cleaned and disinfected with copper sulfate, 5 lbs. to 50 gals. of water. This grower has never found stem rot in his seed beds. It is doubtful, according to this grower and to the inspectors, if there will be any certified sweetpotato fields in Weakley County this year, because of stem rot. Black rot (Ceratostomella fimbriata) is no problem. Mr. B. P. Hazlewood, Superintendent of the Western Tennessee Experiment Station, stated that stem rot will cause 20 to 25% loss year in and year out.

The following data on disease occurrence in Blount, Knox, Loudon, Monroe, and Rhea Counties, Tennessee, were obtained from the records of Mr. Bryant L. Wallace, State Inspector working out of Knoxville. Thanks are due to Mr. Wallace for making the records available. On the first field inspection in July, 14.9 acres in 15 fields of Nancy Hall were disease-free. In 4 fields 1-3/8 acres of Porto Rico, and in 1 field 1-1/2 acres of Big Stem Jersey, were disease-free. In 25 fields, 48 acres of Nancy Hall, 3 acres of Porto Rico, and 2 acres of Early Triumph had small amounts of stem rot, mosaic, and black rot. In all cases the amounts of diseased plants were well under the tolerance (0.1% for stem rot). In the 48 acres there were found 26 plants with stem rot, 65 plants with mosaic, and 14 plants with black rot. (R. A. Hyre, Emergency Plant Disease Prevention Project).

GEORGIA AND ALABAMA: Sweetpotatoes are grown in practically every section of the 2 States. The total acreage is large but the crop is grown in comparatively small fields or patches. The greater part of the crop is stored for home use or sold as green potatoes from the field. However, there are limited areas in the northern parts of both States where the roots are cured and held for the winter market. Losses from disease in the field in all areas visited are nil. Stem rot is usually to be found; not greater than 0.5% of the plants are affected. Only a very few fields were visited where there were as many as 5% wilted plants.

The greatest sweet potato losses in this area are caused by rots of one kind or another in storage. (G. M. Stone, Emergency Plant Disease Prevention Project).

FLORIDA: A number of plantings examined at various points in western Florida appeared quite free from diseases so far as the vines were concerned. The only diseases observed were white rust (Albugo ipomoeae-panduratae) and leaf blight (Phyllosticta batatas) and neither was sufficiently severe to be of any particular consequence. In one field near Waukeenah in western Jefferson County 3 scattered plants exhibited a conspicuous variegation of the leaves. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project).

MISSISSIPPI AND LOUISIANA: Owing to prolonged drought the growing condition of the sweetpotato crop of southeastern Mississippi, observed during the week ending September 4, was below that of normal years.

Fields of Porto Rico, Triumph, and L5 were visited. The most prevalent disease found on the variety Porto Rico was wilt caused by Fusarium bulbigenum var. batatas and F. oxysporum. At least a trace was found in every field examined; in 1 field infection was 0.5 to 1%, and in 1 from 5 to 8%. However, there was only a trace in most fields. On the Triumph variety only a trace of wilt was found; and none was found on L5. The Triumph and L5 varieties are starch potatoes. In most fields the Septoria (S. bataticola) and Phyllosticta leaf spots were present; however, these are of minor importance.

During the week ending September 11 an intensive survey was made of the sweetpotato crop in St. Landry Parish, Louisiana, this being the commercial center of sweetpotato shipment from this State. Five commercial loading and shipping centers were also visited. As in southeastern Mississippi, the appearance of the sweetpotato fields in general is below that of normal years. In many fields the vines are prematurely yellowed owing to the extended drought, and yields will be considerably reduced. Soil rot or pox caused by Actinomyces ipomoeae is much more prevalent than during the past 4 years, as would be expected since dry conditions have been found to be conducive to its development. On 10 farms observed the losses ranged from 1 to 4 acres. Several additional farms were seen that had localized dead areas varying from 1/10 to 1/2 acre. In talking to inspectors stationed at the shipping centers it was learned that many farmers had noticed the disease appearing in small spots in fields where it had not previously been observed. In observations made earlier, stem rot (Fusarium) had been noted in several fields; however, no badly affected fields have been seen, the amount of infection being only a trace in any one field. The Phyllosticta and Septoria leaf spots were scattered and of minor importance.

At the shipping sheds, black rot (Ceratostomella fimbriata), scurf (Monilochaetes infuscans), and soil rot "pox" lesions were observed on the sweetpotatoes. At one shed, one complete lot of 26 crates, that had been hand washed and held a few days before being brought to the shed for shipment, was a total loss due to black rot. At all sheds some black rot was found in the culled sweetpotatoes. It is a general practice at the large shipping sheds to wash the roots by machinery, and frequently, when they are held from 3 to 5 days after washing, some secondary spread of black rot will be present in some lots.

Scurf was noticed on some sweetpotatoes but was very rarely heavy enough to cause a loss in grade. Soil rot lesions were noticed rather frequently, and the disease was causing some loss in grade due to misshapen roots; most of these sweetpotatoes, however, will pass U. S. #2 grade. (L. H. Person, Emergency Plant Disease Prevention Project).

OKLAHOMA AND ARKANSAS: Phyllosticta leaf spot was the only disease noticeable in a planting at Supply, Oklahoma, examined during the period from September 3 to 12. It was general but causing very little loss.

The most important disease observed in the 325 acres examined in Arkansas during the week ending August 31 was Fusarium stem rot (F. bulbigenum var. batatas and F. oxysporum). In plantings at Strong (Union County, south), Marianna (Lee County, east), Rogers (Benton County, northwest), and Springdale (Washington County, northwest), it was caus-

ing losses of 10 to 15%. In a small planting at Springdale it caused the death of nearly 40% of the plants. In the field at Strong leaf spot [? Septoria; cause not designated] was very prevalent, most of the plants being affected and the loss amounting to nearly 10% in a field of more than 75 acres. (Howard W. Larsh, Emergency Plant Disease Prevention Project).

IOWA: (September 20 to 25, from Ames to the eastern boundary of the State then south along the Mississippi River) Septoria leaf spot was prevalent in all fields examined, 50% of the leaves showing lesions, and 1 to 2% of the leaf area being involved. Fusarium stem rot or wilt was general, an estimated average of 6 to 8% showing symptoms. Black rot ranged from none to 20% in individual fields, averaging 5% for all the fields examined. (T. W. Bretz, Emergency Plant Disease Prevention Project).

SOME NEW RECORDS FOR PLANT DISEASES

DOWNY MILDEW OF OATS IN MICHIGAN: Downy mildew (Sclerospora macrospora Sacc.) was collected July 27, 1943 on 2 oat (Avena sativa) selections (C. I. Nos. 3664 and 3909) from a D69 x Bond cross being grown in 15-foot rows on the Agronomy Farm, Michigan Agricultural College, East Lansing, Michigan.

The infected plants were from 2 to 3 inches taller than the normal ones. The panicles were contorted and at first the abnormality was though to be of a genetic nature. However, specimens were sent to H. C. Murphy at Ames, Iowa who identified the disease as downy mildew caused by Sclerospora macrospora. After examination of the specimens Dr. Murphy wrote to Dr. Down as follows:

"This is a rather rare disease, not having been previously reported in the United States except for the reported occurrence in Mississippi which is recorded by Miles and Epps in the October 1942 number of Phytopathology. The specimens received from Mr. Stanton seem to fit the description by Miles and Epps. The oospores were quite abundant, particularly in the leaf tissues, and agreed with the measurements recorded by Miles and Epps."

Specimens also were sent to the Division of Cereal Crops and Diseases of the Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland, where they were examined by Dr. A. G. Johnson who verified the observations made by Dr. Murphy. At the suggestion of Dr. Johnson, specimens have been placed in the mycological collections of the Bureau of Plant Industry, Soils, and Agricultural Engineering.

Whether selections from hybrids on Bond are especially susceptible to this disease remains to be determined. It is suggested that in the future special observations be made for its occurrence, particularly where derivatives from Bond hybrids are under test for either disease resistance or agronomic value. This disease may have been overlooked in Iowa where these selections (C. I. Nos. 3664 and 3909) originated. (T. R. Stanton and E. E. Down, Division of Cereal Crops and Diseases, and the Michigan Agricultural Experiment Station).

RHIZOCTONIA LEAF SPOT OF COTTON: A leaf spot of cotton, caused by the Rhizoctonia fungus, has been found at the Louisiana Experiment Station located near Baton Rouge, Louisiana. The disease developed in early July in a bottom field at the Perkins Road Farm and has since been recorded in several adjacent fields.

Host symptoms are readily recognized. Light. brown, irregularly shaped spots of varying size appear between the veins, bordered by a dark-purplish ring -- a distinctive feature. As the fungus advances, the tissues immediately surrounding the spots become chlorotic and the necrotic area of the old spot cracks or falls out, presenting a ragged, shot-hole appearance. Macroscopic and microscopic examinations reveal abundant light to buff mycelium over and around the spots on the lower surfaces of the leaves.

Sections of infected tissues sterilized for brief intervals in a B-K solution and subsequently plated on potato-dextrose agar have yielded pure cultures of the fungus repeatedly. Also, typical lesions of the disease have been produced on leaves of plants by inoculating with agar cultures, and the fungus reisolated from the inoculated leaves.

The vegetative stages of this Rhizoctonia leaf spot agree closely with Duggar's description of R. solani as given in his comprehensive papers on these forms. (Ann. Missouri Bot. Garden 2:403-458, 1915). It is the first species known to cause "damping off" of seedlings and to attack stems of cotton.

So far as the writer is aware, this is the first report of cotton leaves of mature plants being attacked by Rhizoctonia. The disease has been found in strains of D. and P.L., Coker, and other varieties.

Studies of possible means of dissemination, growth relationships, and pathological anatomy are in progress for a later report. (D. C. Neal, Division of Cotton and Other Fiber Crops and Diseases, cooperating with the Louisiana Agricultural Experiment Station. July 23).

PHOMOPSIS ROT OF POTATO IN WASHINGTON: Potatoes affected by the rot caused by Phomopsis tuberivora Güssow & Foster, were received by the Division of Mycology and Disease Survey from Whatcom County where the diseased tubers were found by inspectors of the Bureau of Entomology and Plant Quarantine. This decay was described in 1932 from British Columbia, and its occurrence in this country was unknown prior to this discovery in Washington.